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I.

CHRONOLOGICAL ARRANGEMENT OF THE COINS OF CHIOS; PART V.

(*Concluded from p.* 257, *Num. Chron.*, 1917. SEE PLATES I, II.)

PERIOD XI. REIGN OF AUGUSTUS—A.D. 268.

ALTHOUGH Chios was not officially merged in the Roman Empire till the end of Trajan's reign, and preserved her title of free city till at least the time of Vespasian,[125] she cannot be said to have had an independent history after the accession of Augustus. For better or for worse the island now followed the fortunes of Rome, and there is no local event of any importance to record. The general desire to be recognized as a citizen of the Empire gradually but effectively killed the Greek municipal spirit, although many outward forms of the old order were preserved.

Among these may be reckoned certain characteristics of the new coinage. From most points of view this coinage may fairly be called imperial, though it never bears the reigning emperor's head or name. Its fabric and general appearance are much the same as those of the coins turned out by the other mints of the Asiatic coast at this time, and it introduces us to several new reverse types, some of them significant of the age, such as the full-length figures of tutelary gods. But,

[125] Pliny, *Hist. Nat.* v. 38.

in spite of all innovations, the Sphinx remains the only obverse device throughout the period, though it is generally the Sphinx with a prow before it—first noted on types Nos. 66–7—the bunch of grapes being only quite exceptionally seen in its old position. Among the reverse types, too, the familiar amphora in a wreath continues to be used occasionally until the coinage ceases to appear.

Then, while every piece, with the exception of the agonistic issues bearing a seated figure of Homer on the reverse, has its denomination marked upon it by name, we find, alongside of the Roman *assaria*, an obol and multiples of the χαλκοῦς. No piece standing for the unit of the latter value has been found, and it seems possible that it may never have been struck. In this particular of marked values, so far as regards its comprehensiveness at any rate, the coinage is distinguished from all other contemporary bronze issues.[126] These obols, tetrachalka, &c., are surely survivals, at least in name, of denominations that had long been current at Chios. The use of a coined obol during the autonomous days of the mint may be doubted, the smallest silver piece so far brought to notice being the supposed diobol of type No. 77, but the word obol must have been in everybody's mouth. As for the

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[126] The large Rhodian bronze pieces inscribed ΔΙΔΡΑΧΜΟΝ, and struck in early imperial times as well as under Nerva and Trajan (*B. M. C.*, Nos. 394–9 and 416–18), are hardly parallel cases, though they bear witness to the absence of silver money in a "free city". On the other hand Mionnet, *Suppl.*, iv, p. 408, No. 304, records ΑΚΚΑ ΗΜΥ on a bronze coin of Syros under Sept. Severus, and Dr. Imhoof-Blumer gives numerous instances of letters denoting values on bronze coins from various mints in imperial times, *Griech. Münz.*, pp. 156–63.

tetrachalka, &c., we may feel practically certain that they preserve the names by which some at least of the various sizes of bronze coins struck during the foregoing periods were known, though it would be rash to attempt to identify them.[127]

But these coins with Greek names have no metrological connexion with any of the Greek monetary systems. They are survivals in name alone, as has just been said. From the reverse types, which were common to both, and from the way in which the one denomination gave way to the other, it is evident that the *obol* was considered to be the equivalent of *two assaria*. The appearance, in Greek guise, of the purely Latin denomination *assarion* among the very earliest of these coins is a sign that we have to deal with the Roman system, and, although no silver was being struck, the customary equation was no doubt observed according to which sixteen *asses* were accepted for one drachm or denarius. The imperial bronze obol of Chios, therefore, as the eighth part of the drachm, was clearly a new coin in value as well as in form.

Then, from a comparison of weights (for which see table at the end of this section where the characteristic symbols and reverse types are also given) it seems certain that the χαλκοῦς, in imperial Chios, was looked upon as the twelfth part of the obol, instead

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[127] Dr. Imhoof-Blumer drew attention in *Num. Chron.*, 1895, p. 283, viii. 1, to a small bronze coin of Clazomenae bearing a large X on the reverse. This, as the author remarks, no doubt stands for χαλκοῦς. The weight of the coin is 20 grains (1·30 grammes), which, curiously enough, is about half that of the average Chian dichalkon. As this coin of Clazomenae is comparatively early, however—between 300 and 200 B.C.—the apparent agreement in weight must be only a coincidence.

of the eighth part as might have been expected from the Greek nomenclature. This division, recalling as it does the twelve *unciae* of the *as*, also suggests Roman influence. In other words, the names *tetrachalkon*, *trichalkon*, and *dichalkon*, although foreign to the Roman monetary system, no more represent the same coins as their Greek prototypes than did their contemporary the bronze obol.

The argument from types gives the same result. If, in accordance with the usual Greek system, the obol had been reckoned as equal to eight χαλκοῖ, the tetrachalkon would be the half-obol. But the half-obol—which does not exist as a separate denomination[128]—was presumably represented by the assarion since the obol was equal to two assaria. The tetrachalkon must therefore have had a different value, and this is proved by the fact that it bore a special reverse type of its own. Similarly, the dichalkon and hemiassarion would not have been struck contemporaneously and with different types, as they were, unless they had represented different fractions of the obol or assarion.

Again, on the supposition, which I am following, that the obol contained twelve chalkoi, the trichalkon would have been the equivalent of the hemiassarion, and the two would presumably not have been issued together. Not only can this be shown to have been the case, the trichalkon—like the tetrachalkon, though a much rarer coin—having appeared only once, but when the hemiassarion was introduced it was made

[128] Mionnet, iii, p. 278, No. 123, describes a coin with the types of the obol and the inscription ΗΜΥ ΟΒΟ as existing in the Cousinéry collection. All trace of the coin seems to have been lost, however, and, as Dr. Imhoof-Blumer says, *Griech. Münz.*, p. 136, note 2, the inscription is improbable.

with the same reverse type as its predecessor. As in the case of the obol and piece of two-assaria, this repetition of type is a certain proof of identity of value, since the reverse type of a given fraction or denomination, once fixed, was never altered. Unless the development during the 250 years of their currency of the various objects that served as types be closely followed it is not always easy to realize this continuity. For instance, in the *Brit. Mus. Cat. Ionia, Chios*, Nos. 133 and 135, the reverse type of some of the late two-assaria pieces is described as a round-bellied amphora, which seems accurate enough at first sight. But its appearance is misleading, and the failure to recognize in it the kantharos for which it was really intended is due, I think, to the fact that this particular reverse type for obols and two-assaria was not employed during the whole of the second and the greater part of the third of the four sub-periods into which I am dividing the imperial coins. The same hiatus does not occur fortunately in the issues of hemiassaria, which also bore a kantharos on the reverse, chiefly because they did not possess an alternative reverse type. Among these nearly all the changes that took place in the drawing of the vessel can be traced from the unquestionable kantharos of the trichalkon—type No. 97 *β*—to that of a hemiassarion—type No. 124 *δ*—which belonged in all probability to the same issue as that which witnessed the revival of the kantharos on the two-assaria. The reverse types of these two coins are practically line for line the same, allowing for the difference in size [**Pl. II. 5** and **7**], and there seems no reason to doubt that both were meant to represent the same object and that that object is a kantharos.

The scale of equivalents may accordingly be stated as follows:

1 denarius = 8 obols = 16 assaria = 96 chalkoi.[129]

This conclusion is confirmed by the coin-weights, as already observed, but it is not so easy to use coin-weights as types in illustration of the argument, on account of the reductions that took place in the former as time went on, and of the inconsistencies between different issues of the same period. Although, when several denominations of a particular issue can be identified, the relations between their respective weights seem to have been fairly well observed, especially in the higher values, it would be extremely hazardous to try to guess the denomination of a coin by means of its weight alone. The irregularity of Roman coin-weights, as compared with Greek, is generally recognized, and the methods of the imperial Chian mint in this respect are a further proof, if proof were needed, of the complete disappearance of the Greek metric system from the island.

Still, although it was imperfectly followed, there appears to have been a genuine standard of weight. This at first may have been founded on the Roman *as* of the Augustan age, which weighed 210·5 grains (13·64 grammes) maximum.

It has already been observed that among the first of these named coins to be struck were certain pieces of one-assarion. These can safely be attributed to the

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[129] Dr. Imhoof-Blumer proposed these same comparative values in *Monnaies grecques*, p. 298; but Dr. Head in *Historia Numorum*[2], p. 601, describes the coins as though they belonged to the Greek system.

early portion of the Augustan age on account of their style, and seem, from all points of view, to be the very earliest surviving coins of this class. They will be found described below under type No. 95 [Pl. I. 1], and they exemplify the remark made in the introduction to the last period to the effect that some of the issues bearing named denominations were probably made before those of the old style had ceased. The treatment of both the obverse and reverse of this assarion, for instance, comes very near to that of types Nos. 82–7, and its lettering agrees with theirs absolutely. One of the latter group, too, bears the same magistrate's name (see type No. 86). The larger coins of type No. 96, on the other hand, are so different in appearance that they seem to belong to another school of art. Some of them resemble the later Augustan coins without denominations—types Nos. 88–94—witness the Sphinx's head of type No. 89, and the sporadic use of the *lunate sigma* throughout. On the whole, however, the coins of type No. 96 look later than anything described in the last period, though there can be no doubt, in my opinion, that among coins with named denominations they come next in order to the assarion just mentioned, with a certain interval between them. The evidence of the weights is entirely in favour of placing type No. 95 in a group apart. No other denominations at all resembling it have been preserved, and it is quite possible that none may have been struck. Only four specimens of this assarion are known to me, and their weights vary between 177·5 grains (11·50 grammes) and 110·2 grains (7·14 grammes), with an average for the four of 153·9 grains (9·97 grammes). This result is quite as much as one would expect from

a provincial mint, seeing that the Roman *as* of Augustus invariably weighed less than the standard half-ounce (13·64 grammes).[130] But when we turn to the heaviest surviving specimens of the other types we find a piece of three-assaria weighing 364·3 grains (23·61 grammes), and an obol weighing 254·2 grains (16·47 grammes). These coins belong to type No. 108, which is by no means the earliest of the succeeding groups. Their comparatively heavy weights may therefore be accidental, as in fact they seem to be, but even so they amount to very little more than two-thirds of a standard represented by an assarion of 177·5 grains (11·50 grammes). This reduction in weight is too great and too general for it to be due to the usual process of degradation; besides, the lower level once reached was fairly well maintained. There must have been a deliberate change of standard between the issue of type No. 95 and that of No. 96, and appearances point to its having been effected during the reign of Augustus. It seems improbable that it should have come as late as Nero's reign, and therefore no attempt need be made to associate it with the latter's monetary reform. The weight of the new assarion too, which averaged about 92·6 grains (6·00 grammes), is far too low to have any connexion with Nero's reformed copper *as*.[131]

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[130] Rev. E. A. Sydenham, *Coinage of Nero*, pp. 23–4, *Num. Chron.*, 1916.

[131] Rev. E. A. Sydenham, *op. cit.*, p. 24, remarks that the copper *as* of Nero's reign seldom exceeded 180·0 grains (11·66 grammes), and that thirty of them in fine condition were found by him to average 163·6 grains (10·60 grammes). The author also says, p. 21 of the same paper, that M. Soutzo's effort to show that "Nero

This stage may be said to have lasted till well on in the second century A.D., to judge by the style of the coins concerned, by which time the standard had become roughly that of an assarion weighing 77·16 grains (5·00 grammes). Then, at some uncertain date during the latter part of the century, this standard was still further and, to all appearances, again intentionally reduced by one-half. That brings us to the last stage in the evolution of the coin-weights, and a unique assarion in mint state weighing 36·4 grains (2·36 grammes) [**Pl. II. 14**] can safely be assigned to the period between the age of the Antonines and the death of Gallienus.

As instances of the careless way in which the weights were often regulated, attention may be drawn to the following facts. We find pieces of one-and-a-half-assarion and one-assarion, belonging to my second sub-period and practically contemporaries, both weighing about 69·45 grains (4·50 grammes), which is light even for the average assarion of this time. There are two pieces of three-assaria among those of the same sub-period, struck from the same dies and in equally good condition, with yet a difference of 61·7 grains (4·00 grammes) between them. Certain other pieces of three-assaria in the same group, but slightly earlier, exhibit the extreme variations of 364·3 and 206·8 grains (23·61 and 13·40 grammes). These belong to the same type, but are struck from different dies. The late pieces of three-assaria vary between 162·0 and 83·2 grains

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harmonized the entire monetary system of the Empire scarcely seems to be borne out by a study of the coins". These named pieces of Chios also militate against such an assumption.

(10·50 and 5·39 grammes). Finally, the small denominations of all periods are most irregular in weight, and amongst their later issues hardly any distinction was made between the half-assarion and the dichalkon, or one-third-assarion.

During the long term of years over which these issues extended their style naturally suffered considerable change, and in the absence of any more definite evidence style remains, as always throughout the Chian series, one of the principal indications of date. Under this test the coins fall into three main groups corresponding roughly to the rise, acme, and decline of Roman art; and my four sub-periods α–δ will be found to follow the same lines, and to be distinguished also, in part, by the changes of standard noted above.

The first group, exhibiting the characteristics of the period between the reign of Augustus and the death of Nero, A.D. 68, contains most of the heaviest coins, and, with Greek traditions presumably still strong, shows a preference for the obol and multiples of the chalkous among its denominations. The trichalkon makes its only appearance here. These are the coins of my sub-period α [**Pl. I. 1–6**]. The next group, which may be said to extend from the death of Nero to about the middle of the second century A.D., and which is signalized at first, as would be expected, by some of the best work produced in these days, witnessed, in its latter portion, the substitution of the two-assaria piece for the obol. On the other hand, it furnishes, rather anomalously, the only issue of tetrachalka at the same time as some of the new two-assaria. This coincides with my sub-periods β and γ, during which the weights remain fairly constant [**Pl. I. 7–13** and **Pl. II. 1–8**].

The third group includes all the pieces of lightest weight, and its debased style is typical of the third-century coins that are generally associated with the name of Gallienus. There is no sign among its issues of any piece smaller than the assarion, which means that all denominations with Greek names had disappeared by this time. There seem to have been no more issues of Homereia either after the change of standard that forms one of the principal dividing lines between this group and the last named. Their place may be said to have been taken, however, by certain so-called alliance pieces bearing the types of Erythrae and Smyrna conjointly with those of Chios. These are the coins of my last sub-period δ [Pl. II. 9-14].

The issues that I would attribute to sub-period α, or to the years between the reign of Augustus and A.D. 68, are to be found under types Nos. 95-107β. But before proceeding to describe the coins in detail a few general remarks on their appearance may be offered.

The flans are of larger size than in the subsequent issues, some of the obols in particular being nearly as large as their corresponding three-assaria pieces, which is never the case with those to be described later. An unusual number of all denominations are struck over older coins, though I have been quite unable to identify any of the originals. All the coins are distinctly rare, and several of them are unique. After type No. 95—the assarion already alluded to—the style of the obverse undergoes a complete change. The severity which had characterized nearly all the work of the preceding centuries disappears, and we find a succession of florid Sphinxes, some of them extraordinarily ugly and of clumsy execution.

As regards a chronological arrangement within the limits stated it is not easy to come to a conclusion. In default of any more cogent evidence, I have allowed myself to be guided by the words and lettering of the inscriptions with the following results.

Just as the inscription ΧΙΩΝ of type No. 76 β was used as an argument for assigning this drachm to the latest possible date because ΧΙΩΝ is the form almost invariably used on the imperial issues, so now the word ΧΙΟΣ on certain of the latter may fairly be claimed as a sign of their relative earliness. These will accordingly be found at the head of the following list, as they presumably reflect the influence of autonomous days. The attribution is supported, too, by the fact that the pieces so inscribed include type No. 95, which, on other grounds, has already been selected as the earliest of all these imperial coins. Then there is a small group distinguished by the uncial form of ω in ΧΙωΝ. As this letter seems to have had but a short life at Chios, in spite of the fact that ϵ is constantly employed, and as the group is connected in other ways with the preceding one, the coins in question may be assumed to have immediately succeeded those with ΧΙΟΣ. Last of all I am placing a few of the issues showing Ω in ΧΙΩΝ, which, on account of their indifferent style, and other peculiarities noted below, can hardly have followed any of the better executed and more uniform groups of sub-period β.

Various misspellings occur on these imperial issues, and since they are more plentiful on the earlier coins than on the later ones it is convenient to summarize them here. ACAPIN or ACCAPIN for ACCAPION (in the phrase ἀσσάριον ἥμισυ) will be noticed in

sub-period α, and in the second issue attributed to sub-period β. HMYCY for HMICY is general, as elsewhere at this time, but TPEIA for TPIA is peculiar to sub-period α, and the contraction TPIACCAPIA to α, and to the first issue of β. ACAPIA frequently and ACCAPA very rarely are found in δ, and HMI-ACAPION occurs occasionally in β and γ, but the two intermediate sub-periods show most regard for literary forms on the whole. The indifference to these and the careless drawing of the types, both of which features are so marked in sub-period α, point to its being a time of transition. On the other hand, the only instances of HMICY being so spelt occur in sub-period α and the early portion of β, but this also might be counted a misspelling according to the new standard. The omission of the O in ACCAPIN betrays the colloquialism that was probably well established in the first century A. D.,[132] though it is never found on any issue later than the one mentioned in sub-period β, by which time a new tradition may be said to have been created.

Magistrates' names are by no means plentiful, and there are considerably more issues without names than with them, as is the case throughout the whole imperial series. Attention has been drawn above to the occasional appearance during the preceding centuries of issues without magistrates' names after the recording of such had become habitual.[133] It seems possible that

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[132] Compare HMIOBEAIN on bronze coins of Aegium of the first century B.C., *Brit. Mus. Cat. Peloponnesus, Aegium* 1. For other instances see Franz, *Elem. epigr. graecae*, p. 248, Αὐρῆλις, Ἰοῦλις, *ποδάριν, φιλημάτιν*, &c.; *J. H. S.*, 1895, p. 120, EΞEΔPIN; and *J. H. S.*, 1897, p. 83, ΓPAMMATIN.

[133] See *Num. Chron.*, 1915, p. 388, and types Nos. 47 *a*, 53 *a*,

the coins without names and symbols are those struck at the expense of the state when no wealthy "magistrate" was forthcoming to perform the necessary λειτουργία. The fact, too, that the earliest issues, according to my arrangement, without magistrates' names are also the first on which ΧΙΩΝ takes the place of ΧΙΟΣ may be said to support this suggestion.

As weight is in some ways the most interesting feature of these coins, and as this is affected to a considerable extent by condition, I am adding wherever advisable, as indications of condition, the letters (g) = good, (m) = moderate, and (b) = bad to the details of description as already given.

SUB-PERIOD *a*. WITH ΧΙΟΣ.

95. *Obv.*—Sphinx seated l. on club with handle to r. of very similar style, especially as regards the head, to that of type No. 82, but with less conventionalized wing, raising farther forepaw over stamnos. In exergue ΑΣΣΑΡΙΟΝ. No border.

Rev.—Amphora with lip between ΦΑΥΣΤΟΣ r. and ΧΙ ΟΣ l. both downwards. In field l. cornucopiae. Border of dots.

Æ. ↑↑ 25·00 mm. 174·4 grains (11·30 grammes). (g) Berlin Cabinet. Published by Imhoof-Blumer, *Monn. grecques*, No. 137.

[Pl. I. 1.]

(This specimen is countermarked on shoulder of amphora on *rev.* with a bunch of grapes.)

↑↓ 25·75 mm. 153·54 grains (9·95 grammes). (m) Berlin Cabinet.

↑↓ 23·50 mm. 110·2 grains (7·14 grammes). (m) Leake Coll., Fitzwilliam Mus., Cambridge.

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70 β, &c. These are all bronze with one exception, that of the diobols of type No. 77.

↑↓ 25·50 mm. 177·5 grains (11·50 grammes). (m) Munich Cabinet.

(On this specimen the *obv.* inscription is arranged [ΑΣΣ] l., ΑΡΙΟ r., ↶ and Ν in exergue.)

96 *a*. *Obv.*—Sphinx seated r. on plain exergual line, raising farther forepaw over prow; head-dress and wing somewhat resembling preceding, but of more careless style. In exergue ΤΡΙΑ ΑCCΑΡΙΑ. No border.

Rev.—Amphora with lip between ΑΝΤΙΟΧΟΣ ΑΠΟΛΛΩΝΙΔΟΥ r. and ΧΙ ΟΣ l. all downwards. In field l. bunch of grapes. Border of dots.

Æ. ↑? 32·00 mm. 337·0 grains (21·84 grammes). (?) Bologna Cabinet, published *Monn. grecques*, No. 140.

↑← 33·50 mm. 309·8 grains (20·08 grammes). (b) Paris Cabinet, No. 5163.

(This specimen is struck over another coin.)

96 *β*. *Obv.*—Sphinx seated r. on plain exergual line, raising farther forepaw over prow; head like preceding, but wings straight and both showing. Around [ΑΣΣΑ]ΡΙΝ ΗΜΙΣΥ ↶. No border.

Rev.—Two thyrsi crossed with bunch of grapes above, kantharos below, ΧΙ l. and ΟΣ r. Around Α[ΝΤΙΟΧΟΣ] ΑΠΟΛΛΩΝΙΔΟΥ ↷. No border visible.

Æ. ↑↓ 27·00 mm. 170·5 grains (11·05 grammes). (m) Berlin Cabinet.

↑↗ 27·50 mm. 167·7 grains (10·87 grammes). (b) Athens Cabinet.

97 *a*. *Obv.*—Sphinx seated r. on plain exergual line, raising farther forepaw over prow; both wings showing. Above ΟΒΟΛΟΣ. Border (?).

Rev.—Kantharos with ΣΤΕΦΑΝΗΦΟΡΟΣ r. and ΧΙ ΟΣ l. In field l. cornucopiae and plemochoe. The whole i.. wreath.

Æ. ↑? 31·00 mm. 222·2 grains (14·40 grammes). (?) Florence Cabinet, published *Monn. grecques*, No. 138.

↑← 31·00 mm. 186·7 grains (12·10 grammes). (m) Munich Cabinet.

97 *β*. *Obv.*—Sphinx seated r. of same design as type No. 96 *β*, but wearing *modius*, raising farther forepaw over indistinguishable object. Below or behind Sphinx ΤΡΙ, above ΧΑΛ, and in front ΚΟΝ. No border.

Rev.—Kantharos with ΣΤΕΦΑΝΗΦΟΡΟΣ r. and ΧΙ ΟΣ l. both downwards. In field l. bunch of grapes. No border visible.

Æ. ↑← 20·50 mm. 62·5 grains (4·05 grammes). (m) Athens Cabinet.

↑↓ 20·50 mm. 55·6 grains (3·60 grammes). (m) Berlin Cabinet, published *Monn. grecques*, No. 139.

↑↓ 18·25 mm. 55·6 grains (3·60 grammes). (m) Vienna Cabinet.

↑↑ 20·50 mm. 51·5 grains (3·34 grammes). (b) Brit. Mus. Cat. Ionia, Chios, No. 112.

98. *Obv.*—Sphinx seated r. on plain exergual line, of same design as type No. 96 *α*, raising farther forepaw. Border of dots.

Rev.—Homer seated l. on chair with straight back holding volumen in both hands. No border. Inscription mostly illegible, but - - ΟC visible in field l. upwards.

Æ. ↑↑ 19·50 mm. 57·7 grains (3·74 grammes) (b) Berlin Cabinet.

99. *Obv.*—Sphinx seated l. on prostrate amphora (?) with straight wing as on type No. 96 *β*, raising farther forepaw over kantharos. Border of dots.

Rev.—Homer seated l. on chair with carved back holding volumen in r. Above ΟΜ[ΗΡΟC] ΧΙΟC ↷.

Æ. ↑↑ 20·50 mm. 80·5 grains (5·22 grammes). (m) Brit. Mus. Cat. Ionia, Chios, No. 139.

[Pl. I. 2.]

SUB-PERIOD *α*. WITH XIΩN.

100. *Obv.*—Sphinx of very rude style seated r. on club with handle to r., wing curled as on type No. 96 *α*, and raising farther forepaw over prow. On l., from below club, traces of TRIA ACCAPIA ↻.

Rev.—Amphora like that on type No. 96 *α*, but without lip, with XIΩN l. downwards, and bunch of grapes r. The whole in thick laurel-wreath terminating above in two thyrsus-like knobs, and the ties turned up on either side of foot of amphora. A row of dots both within and without the wreath possibly to represent berries.

Æ. ↑↓ 33·75 mm. 247·3 grains (16·025 grammes). (g) My collection, probably ex Whittall Coll. (Restruck on another coin.)

101. *Obv.*—Similar to preceding, but Sphinx seated l. on plain exergual line. Inscription [TPIA ACCAPIA] invisible.

Rev.—Same as above except that inscription reads X N l. and I Ω r. of amphora, and that the bunch of grapes is absent. The amphora has a thicker neck than preceding.

Æ. ↑ ? 29·00 mm. 265·4 grains (17·20 grammes). (m) Collection B. Yakountchikoff.

102. *Obv.*—Sphinx of equally rude style, but more like type No. 96 *β* in design, seated l. on plain exergual line, two wings showing, and raising farther forepaw over prow. Above TPI ACC A PIA ↷. Border of dots.

Rev.—Same as preceding except that inscription reads XI l. and ΩN r. of amphora, and that a dotted border encircles the laurel-wreath.

Æ. ↑↑ 33·00 mm. 314·2 grains (19·36 grammes). (g) My collection, probably ex Whittall Coll. [Pl. I. 3.]

↑↑ 33·00 mm. 240·7 grains (15·60 grammes). (b) Rollin and Feuardent's stock, Paris, 1913.

(Both these specimens are struck over other coins.)

103 *α*. *Obv.*—Similar to preceding, but Sphinx seated r., and only one wing showing. Above, in small letters, ΟΒΟΛΟC ⌒. No border.

Rev.—Kantharos with ΧΙ l. and ΩΝ r. in ivy-wreath tied below and terminating above in two thyrsus-like knobs.

Æ. ↑← 31·50 mm. 199·4 grains (12·92 grammes). (g) Rev. E. Rogers's Collection.

↑← 28·50 mm. 179·0 grains (11·60 grammes). (g) My collection.

↑← 28·00 mm. 162·0 grains (10·50 grammes). (m) Brit. Mus. Cat. Ionia, Chios, No. 107.

↑← 28·00 mm. 161·2 grains (10·45 grammes). (g) Berlin Cabinet, pierced.

↑← 32·75 mm. 151·2 grains (9·80 grammes). (b) Vienna Cabinet, No. 18000.

103 *β*. *Obv.*—Similar to preceding, but Sphinx wears *modius*, and raises farther forepaw over aplustre. In exergue ΑCCA[ΡΙΟΝ ΗΜΥCΥ]. Border of dots.

Rev.—Two thyrsi crossed with bunch of grapes above, prow to l. below, ΧΙ l., and ΩΝ r. in laurel-wreath tied below and terminating above in two thyrsus-like knobs. The whole in dotted border.

Æ. ↑← 25·75 mm. 165·1 grains (10·70 grammes). (g) My collection, probably ex Whittall Coll.

↑← 26·00 mm. 114·4 grains (7·41 grammes). (b) Mr. F. W. V. Peterson's Collection.

104 *α*. *Obv.*—Sphinx in unusually upright position, two wings showing and hair very roughly indicated, seated r. on plain exergual line raising farther forepaw over prow. In exergue ΧΙΩΝ. No border.

Rev.—Kantharos with ΟΒΟ l. and ΛΟC r. ⌣ in ivy-wreath tied below.

Æ. ↑↑ 32·25 mm. 193·8 grains (12·56 grammes). (g) Paris Cabinet, No. 5172. [Pl. I. 4.]

↑↑ 30·50 mm. 165·9 grains (10·75 grammes). (b) Vienna Cabinet.

104 β. *Obv.*—Similar to preceding, but Sphinx raises farther forepaw over aplustre. In exergue ΠΙΝΗΜΥCY / ACA. No border.

Rev.—Two thyrsi crossed with bunch of grapes above, kantharos below, ΧΙ l., and ΩΝ r. The whole in border of fine dots.

Æ. ↑← 29·00 mm. 177·5 grains (11·50 grammes). (g) Berlin Cabinet, published *Griech. Münzen*, No. 400. [Pl. I. 5.]

↑← 26·50 mm. 128·4 grains (8·32 grammes). (b) Athens Cabinet.

SUB-PERIOD α. WITH ΧΙΩΝ.

105. *Obv.*—Sphinx of as rude style as preceding, but less upright and with only one wing showing, raised as on type No. 95, seated l. on plain exergual line, and raising farther forepaw over prow. In exergue ΤΡΕΙΑ; above, traces of [ΑCCAPIA] (probably ∩). Traces of dotted border.

Rev.—Full-length statues of Apollo and Dionysus to front on plain exergual line, draped and laureate, heads facing inwards. Apollo l. holds patera in r. and rests l. hand on hip. Dionysus r. pours libation from plemochoe in r. and holds thyrsus in hollow of l. arm. In field l. Χ / Ω r. Ι / Ν. No border visible.

Æ. ↑↓ 31·50 mm. 241·4 grains (15·64 grammes). (m) Vienna Cabinet, No. 17978. (Apparently struck over another coin.)

106. *Obv.*—Practically the same as preceding, but Sphinx to r. In exergue ΤΡΕΙΑ; other letters invisible. Border of dots.

Rev.—Same as preceding except that the figures face to front instead of inwards. Inscription as before. Border of dots.

Æ. ↑↓ 34·00 mm. 362·8 grains (23·51 grammes). (m) Hunterian Cabinet, No. 56.

107 *a*. *Obv.*—Sphinx of careless style and with conventional wing of last period (types Nos. 83–4) seated l. on plain exergual line, and raising farther forepaw. No symbol in front of Sphinx, but Π in exergue. Border of dots.

Rev.—Kantharos as on type No. 104 *a*, but somewhat shorter in stem. Around ΗΜΙΑCCΑΡΙΟΝ ΧΙΛΝ Ω in various forms, generally abbreviated. The whole in dotted border.

Æ. ↑↑ 18·00 mm. 61·7 grains (4·00 grammes). (g) Berlin Cabinet.

The inscription on this specimen reads ΗΜΙΑCC l., ΑΡΙ above, and ΟΝΧΙΛΝ r. of kantharos.

↑↑ 17·00 mm. 53·1 grains (3·44 grammes). (g) Vienna Cabinet, No. 18011.

[Pl. I. 6.]

↑↑ 17·75 mm. 39·4 grains (2·55 grammes). (g) My collection.

↑↑ 17·00 mm. 38·6 grains (2·50 grammes). (g) Berlin Cabinet, published *Monnaies grecques*, No. 145.

The reverse die of all these is the same and faulty, the inscription reading ΕΙΜΙΑC l., Α above, and ΧΙΛΝ r. of kantharos. (See *Griechische Münzen*, p. 135.)

↑↑ 17·50 mm. 38·6 grains (2·50 grammes). (m) Berlin Cabinet.

↑↓ 17·00 mm. 27·0 grains (1·75 grammes). (b) Berlin Cabinet.

Both of these are from a third reverse die reading ΧΙΛΝ l. and ΗΜΙ r. of kantharos.

107 *β*. *Obv.*—Same as preceding.

Rev.—Amphora, as on type No. 102, with ΧΙΛΝ ς to l. and ΔΙΧΑΛ ϑ to r. Border of dots.

Æ. ↑↓ 16·00 mm. 30·9 grains (2·00 grammes). (m) My collection, bought in Chios.

↑↑ 15·00 mm. 29·0 grains (1·88 grammes). (m) Paris Cabinet, No. 5173.

No. 95. *Assarion.* Enough has already been said about this type to show that it is practically a link between the early imperial coins without named denominations and the rest of those that bear them. Its style and the magistrate's name, ΦΑΥΣΤΟΣ without a patronymic, connect it with types Nos. 82–7, and its denomination with No. 96 and those that follow after it. The magistrate of type No. 86 was no doubt the same person as this.

The stamnos in front of the Sphinx is unique among the various objects found in this position on imperial coins. The prow is of the most frequent occurrence, but there seems to have been some attempt to confine certain objects to particular denominations, though the scheme was not carried out as consistently as in the case of the reverse types. The issues of one-and-a-half-assarion, for instance, show four different symbols of this nature, and the Homer coins three. The club on which the Sphinx of this type is seated is one of the adjuncts that I look upon as mint marks (see remarks under type No. 72), and will be met with again on various denominations belonging to this and the next sub-periods. The cornucopiae, however, seems to be a genuine magistrate's symbol, and has not been seen since some of the types that I have attributed to the early part of the last period, though it appears again in this one on the obol of type No. 97.

There were at least two issues of this assarion, as is shown by the varying form of the obverse inscription.

The countermark on one of the Berlin specimens suggests that the coin was reissued later on, as a similarly formed bunch of grapes is the symbol used on the three-assaria piece of type No. 96 *α*, the trichalkon, No. 97 *β*, and the three-assaria, No. 100. This bunch of grapes is distinctive in not exhibiting the attached piece of the vine-shoot as had been the custom hitherto. It will be remembered that a countermark very closely resembling this seems to have been used on type No. 89, one of the drachms bearing the name Antiochus. There is unfortunately a little doubt about the actual object represented on account of the condition of the coin, but if it could be vouched for the countermark would, I think, strongly support the attribution of the drachm in question to the time of Augustus rather than to that of Nero.[134]

No. 96. *Three-assaria* and *One-and-a-half-assarion.* With this type begins the series of clumsily executed pieces that present such a contrast both to the assarion just referred to and to the early types of the next subperiod. It has already been suggested that there was probably an interval between type No. 95 and the present one, and that the silver and bronze types without denominations, Nos. 88–94, were very possibly struck during that interval. Their degraded style is exactly suitable to it, and the drachms, Nos. 88–9, seem to coincide with its extreme limits.

The amphora on this three-assaria piece will be seen to be the same as that on types Nos. 88 and 90–2. The denomination is written altogether in the exergue as on the last type, a method that will be seen to have

[134] See p. 253, *Num. Chron.*, 1917.

had only a short vogue. I give the lettering as rendered by Dr. Imhoof-Blumer in *Monnaies grecques*, since that of the Paris specimen is illegible, and it is worth noting as providing an instance among these coins of the two forms of *sigma* being used on the same piece, as was remarked in the case of type No. 92.

The magistrate's name with a patronymic is also a link with the previously described types Nos. 85 and 92.

Another feature connecting this and some of the following types with those already attributed to the early years of the Augustan age is the die-position ↑←. This will be seen to occur fairly frequently during the present sub-period, but not at all later.

The reverse inscription of the one-and-a-half-assarion is written round the type from right to left so that most of the letters appear upside down when the coin is held upright. This style of lettering, after tentative beginnings which go back to the days of Julius Caesar, became the rule at Rome during the reigns of Vespasian, Titus, and Domitian, but then ceased. It is of course familiar to students, though I have never seen it quoted as a test of date. Since, however, the lettering of coins took an exactly similar course at many Asiatic mints, Bargylia, Cos, Rhodes, Miletus, and Smyrna, to mention a few prominent cases only where the coins can be dated because of the emperors' heads that they bear, it seems fair to treat it as a guide at Chios in the absence of other evidence there. The attribution, then, of the types assigned to the present sub-period finds confirmation in the fact that the lettering in question is occasionally found among

them, while its consistent appearance on all the denominations but one of type No. 110 in the next sub-period may be taken to show that those coins are probably very little later than the end of the first century [**Pl. I. 11–13**].

The latest instance of this lettering that I have been able to trace among the mints in the neighbourhood of Chios is on a coin of Samos belonging to the reign of Trajan (*Brit. Mus. Cat. Ionia, Samos*, No. 237).

No. 97. *Obol* and *Trichalkon*. All the specimens of these coins that I have been able to examine are unfortunately in indifferent condition and some of the details are unrecognizable. But the lettering can be read well enough to show that Ε and not Є was the form used, this being probably the latest appearance of Ε at Chios.

Apart from this being the only known instance of the trichalkon denomination the main interest of the type centres in the magistrate's name. Is **ΣΤΕΦΑΝΗΦΟΡΟΣ** to be understood as an official title, or as a personal name? In favour of the former hypothesis is the fact that the name, if it be one, is not accompanied by a patronymic which, on the analogy of other contemporary issues, we should have expected in this case. There is plenty of evidence, however, that the word was used as a personal name during the Roman period,[135] and I am accordingly including it in my list of magistrates.

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[135] See Fick and Bechtel, *op. cit.*, p. 254, and an imperial issue of Hierocaesarea in Lydia (Welzl von Wellenheim, No. 6264) which is inscribed **ЄΠΑΡΧCΤЄΦΑΝΗΦΟΡΟΥ**; also Münsterberg, *op. cit.*, p. 109.

Mionnet's incomprehensible reading **ΧΑΛΠΗ** (*Méd. gr.*, vi,

Nos. 98–9. *No denomination.* From the style of the obverses of these two types, and the use of the word XIOC on the latter, it is evident that they must be attributed to the same sub-period as the foregoing. No. 98 looks the earlier of the two on the whole, but unfortunately its condition is so bad that only fragments of the lettering can be distinguished. The drawing of its reverse is distinctly better than that of No. 99, the relation between them seeming to me to be much the same as that between types Nos. 95 and 96.

With regard to the general aspect of these coins with a figure of Homer on the reverse and the probable circumstances of their issue it is unnecessary to say anything here, as I am concerned mainly with their chronological arrangement. Besides, Mrs. K. A. Esdaile's article in *J. H. S.*, 1912, entitled "Homeric Coin Types", gives an exhaustive account of all coins of this nature. It is right to point out, too, that in the course of her paper (pp. 307–10) Mrs. Esdaile was the first to draw attention to the proper order of succession of the Chian issues as known to her. I am in complete agreement with her arrangement, as will appear below, and have only succeeded in making one addition to it, which is the type No. 98 from Berlin. The weights of the Homer coins, which seem to have been regulated so as to fall between the trichalkon or hemiassarion and the tetrachalkon, suffer a gradual decline like those with named denominations. Type No. 98 is the only exception to this, and will be

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p. 389, No. 69) is no doubt due to the curiously dispersed obverse inscription of the trichalkon denomination, and to the bad preservation of its extant specimens.

observed to be rather light for its position at the head of the list.

Nos. 100–2. *Three-assaria.* These three types are evidently near contemporaries and differ only in details. They are among the ugliest products of the Chian mint, not even excepting some of the issues of sub-period *δ*.

As instances of the clumsy drawing characteristic of this time attention may be called to the way in which the Sphinx's hind paw projects at an angle above the ground-line [Pl. I. 3], and to the awkward position of the prow, very similar to that first assumed by the amphora on the early staters. (Compare Pls. II and XVIII of *Num. Chron.*, 1915.) The prow itself, too, is so rudely and conventionally rendered as to be hardly recognizable in some cases. The former peculiarity occurs in type No. 102 and in the two following sub-types, after which the technique improves in that respect; but a well-formed prow squarely placed on the ground-line is not to be found on any of the issues attributed to this sub-period.

Although these types present a few new features they yet preserve sufficient links with some of the coins already described to make their attribution to this particular part of the series a practical certainty. The bunch of grapes on the reverse of No. 100, for instance, which has already been referred to under type No. 95, is one such link; the club on the obverse is another, and some other similar though smaller points will be found indicated in the detailed descriptions above. The thick laurel-wreath on the reverses recalls the ivy-wreath on the small bronze pieces of type No. 94 (Period X), and is the first appearance on

coins with named denominations of what later on becomes one of their most familiar devices. All the really early issues, of no matter what denomination, have a dotted circle or no border at all on their reverses. The uncial form ω, being so rare at Chios, as noted above, may also be regarded as a link with the issues marked ΧΙΟΣ (see type No. 96 on which this form is used in ΑΠΟΛΛΩΝΙΔΟΥ).

No. 103. *Obol* and *One-and-a-half-assarion.* The chief point calling for comment in this type is the remarkably consistent occurrence of the die-position ↑←, which constitutes another bond between the coins marked ΧΙΩΝ and those with ΧΙΟΣ (see types Nos. 96–7), especially as it is not used again at Chios except on type No. 104 β, also of this group.

The aplustre before the Sphinx on the one-and-a-half-assarion is an innovation, but, as has already been observed, this denomination is peculiar in exhibiting a variety of objects in this position. The value of this particular denomination is always inscribed on the obverse of coins belonging to the first sub-period, and on the reverse of all later ones, and, though both specimens of this rare sub-type are badly struck, there is no doubt that they conform to the rule. The thick laurel-wreath on the reverse, practically the same as that on types Nos. 100–2, is its first appearance on this denomination.

No. 104. *Obol* and *One-and-a-half-assarion.* These coins are quite different from the last in general appearance, though the presence of several of the details already alluded to makes it clear that they must be their near contemporaries.

Nos. 105–6. *Three-assaria.* On these unique coins, both of which are unfortunately in too bad preservation for reproduction, is seen for the first time the familiar reverse portraying statues of the tutelary gods Apollo and Dionysus. On No. 105 the figures are represented with their heads turned inwards, but this scheme was renounced in favour of full-facing heads on all subsequent issues but one until sub-period δ, when it was revived. The obverses, on the other hand, are in keeping with all those hitherto described as regards their rough drawing and the highly conventional rendering of the prow. From now onwards the inscription ΧΙΛΝ will be observed to remain unchanged.

The misspelling ΤΡΕΙΑ is confined to these two issues.

No. 107. *Hemiassarion* and *Dichalkon.* It is difficult to decide where exactly to place these two sub-types, but on the whole they seem best suited to this sub-period with its varying style. The wing of the Sphinx is different from that on any of the preceding specimens, but the way in which its near foreleg is drawn extended, instead of upright, is the same as on the last two types, and on the next one which begins sub-period β. The kantharos is a little shorter in the stem than any of those mentioned above, but is undoubtedly an earlier stage in the development of the type than that of No. 108 ε. The amphora of the dichalkon is identical with that of the three-assaria types Nos. 101–2, a form very soon to be superseded by that with the open mouth which characterizes all subsequent issues. Lastly, the Π in the exergue may plausibly be referred to the same source as the ΠΟ

and Γ of types Nos. 60 and 62 β.[136] As neither this Π nor any other similar letter or group of letters is to be found again on this portion of the Chian series, it is fair to assume that these two exceptions belong to its early period rather than to a later one.

The die-position ↑↑, which occurs most frequently here, is also more in keeping with coins of sub-period α than with those of β, among which it is quite exceptional.

A peculiarity shared by both denominations of this type is that the value is expressed, with one exception, in an abbreviated form, ΗΜΙ or ΗΜΙΑCCA and ΔΙΧΑΛ. These are the only instances of such abbreviations known to me. Neither denomination has a symbol before the Sphinx. As the former is being taken to be the earliest example of the hemiassarion this is the proper place to draw attention to the kantharos used as its reverse type which repeats that of the trichalkon of type No. 97, the equivalent in value of this piece.

Sub-period β.

This sub-period furnishes the best work of the imperial coinage, and the development of types Nos. 108–11, which compose it, can be traced with a very fair amount of certainty.

The issues are remarkable in being far more complete as regards their constituent denominations than any of the earlier ones. The first and second types represent rather rare coins, and neither of them can

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[136] See p. 326 of *Num. Chron.*, 1916, where it is suggested that the letter or letters in question may represent an *officina* of the mint.

have been struck at all plentifully, but with the third begins the series of comparatively common coins of Chios that must have circulated in large numbers.

Restriking is almost unknown, and the whole appearance of the coinage points to the period of its issue having been one of relative prosperity. The flans are of more regular shape, and the lettering is more carefully executed than on the earlier issues. The decrease in the size of the flans as compared with those of the last sub-period is especially noticeable in the case of the obols and the pieces of one-and-a-half-assarion.

The amphora is not used at all as a reverse device for the three-assaria denomination, and, possibly in sympathy with it, the obols here show an alternative reverse to the kantharos that has served them alone so far. This is a single full-length male figure, without any distinguishing adjunct on what I am taking to be the earliest issues. The figure can hardly be that of a god, and certainly not one of the gods worshipped at Chios,[137] but the helmet at its feet on most of the later issues suggests that the statue reproduced may have been that of a local hero. If so it must surely be intended to represent Oenopion, whose association with these Dionysiac types would be most appropriate, especially when it is remembered that his fame is known to have been preserved in the island till well on in the second century A.D. at least.[138]

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[137] These were the Ephesian Artemis, the Tyrian Heracles, Athena Poliouchos, Apollo, and Dionysus, the last two under various names. Poseidon and Zeus also had shrines. Fustel de Coulanges, *op. cit.*, pp. 322–3.

[138] See *Num. Chron.*, 1915, p. 10.

It has already been observed that some of the heaviest coins of the whole imperial series occur in this sub-period. They will be found among the three-assaria pieces and the obols of type No. 108, though type No. 106 runs the former very close. Some abnormally heavy dichalka also occur in type No. 110.

There are no magistrates' names to record.

108 *a*. *Obv.*—Sphinx as on types Nos. 105–6, but of more pleasing style, seated l. on plain exergual line, raising farther forepaw over prow. In exergue ΤΡΙΑϹ, to r. Ϲ, and above ΑΡΙΑ ∩. Border of dots.

Rev.—Same as on type No. 106. Border of dots.

Æ. ↑↓ 33·00 mm. 364·4 grains (23·61 grammes). (g) Berlin Cabinet.

↑↓ 31·00 mm. 313·3 grains (20·30 grammes). (g) Aberdeen University.

↑↓ 31·50 mm. 305·6 grains (19·80 grammes). (b) Coll. E. T. Newell.

↑↓ 32·50 mm. 206·8 grains (13·40 grammes). (g) Berlin Cabinet.

108 *β*. *Obv.*—Same as preceding but ΟΒΟΛΟϹ above, or ΟΒΟ above and ΛΟϹ in exergue, in small letters. Border of fine dots.

Rev.—Full-length nude statue of a hero, laureate, standing facing on plain exergual line, and leaning on staff with l. arm around which chlamys is wrapped. In field l. X ∩ and r. I N. Border of fine dots.

Æ. ↑↓ 28·00 mm. 254·2 grains (16·47 grammes). (g) Vienna Cabinet, No. 17998.

↑↓ 29·00 mm. 211·4 grains (13·70 grammes). (b) Athens Cabinet.

↑↓ 27·25 mm. 176·9 grains (11·46 grammes). (m) My collection.

↑↓ 27·00 mm. 142·6 grains (9·24 grammes). (m) Munich Cabinet.

↑↓ 26·00 mm. 129·5 grains (8·39 grammes). (b) Leake Coll., Fitzwilliam Museum, Cambridge.

108 γ. *Obv.*—Same as preceding, but Sphinx rests farther forepaw on handle of club placed upright on ground-line. Above traces of XIΛN. No border.

Rev.—Two thyrsi crossed with bunch of grapes above. Around ACCA PION H MICY Ω. No border visible.

Æ. ↑↑ 24·25 mm. 158·5 grains (10·27 grammes). (g) Berlin Cabinet, pierced.

↑↑ 22·50 mm. 88·4 grains (5·73 grammes). (m) Paris Cabinet, No. 5124.

108 δ. *Obv.*—Same design, but Sphinx seated on club with handle to l. raises farther forepaw over bunch of grapes. Above XIΛN. Border of fine dots.

Rev.—Amphora, of similar design to that of type No. 101 but better drawn, with ACCA r. and PION l. Ω. Border of fine dots.

Æ. ↑↓ 23·50 mm. 102·2 grains (6·62 grammes). (g) Berlin Cabinet. [Pl. I. 7.]

108 ε. *Obv.*—Same design, but Sphinx seated on plain exergual line raises forepaw over prow. Dotted border.

Rev.—Kantharos, similar to that on type No. 107 α but better drawn. Around HMIA CCAPI ON Ω. Dotted border.

Æ. ↑? 15·50 mm. 45·7 grains (2·96 grammes). (g) Coll. Dr. Imhoof-Blumer. [Pl. I. 8.]

Six other specimens known with sizes varying from 17·00–15·25 mm. and weights from 52·9–24·3 grains (3·43–1·58 grammes), all showing the die-position ↑↓.

109 α. *Obv.*—Sphinx of still better style, with long straight wing, seated bolt upright to l. on plain exergual line, resting nearer forepaw on prow, and raising farther one above it. In exergue TPIA, to r. ACCAPIA ϽΛ. Border of dots.

Rev.—Same as on type No. 108 *a* except that a flaming altar stands between the gods.

Æ. ↑↓ 33·00 mm. 240·8 grains (16·12 grammes). (b) Vienna Cabinet, No. 17976.

109 *β*. *Obv.*—Practically the same as preceding except as regards inscription, which reads X l. and I r. above, and ΩN in exergue. Border of dots.

Rev.—Two thyrsi crossed with ACCA P I NHM YCY Ω around. The whole in ivy-wreath formed of single leaves set in opposite directions from the top, and terminating above and below in two large dots, from between the upper pair of which hangs a bunch of grapes.

Æ. ↑↓ 24·00 mm. 128·2 grains (8·31 grammes). (m) Berlin Cabinet.

↑↓ 24·25 mm. 123·2 grains (7·98 grammes). (m) Berlin Cabinet.

↑↓ 23·00 mm. 119·4 grains (7·74 grammes). (g) Vienna Cabinet, No. 17988, pierced. [Pl. I. 9.]

↑↓ 24·00 mm. 68·7 grains (4·45 grammes). (b) Paris Cabinet, No. 5126.

109 *γ*. *Obv.*—Same as No. 109 *a* except that bunch of grapes takes the place of prow in front of Sphinx, and that inscription reads XI ΩN above. Border of dots.

Rev.—Amphora with curved handles and mouth represented as if seen from above. To r. of it ACCA and to l. PION, both downwards. Border of dots.

Æ. ↑↓ 21·50 mm. 102·5 grains (6·64 grammes). (g) Hunterian Coll., No. 63.

(This specimen is struck over another coin.)

↑↓ 21·00 mm. 92·6 grains (6·00 grammes). (m) Berlin Cabinet.

↑↓ 20·25 mm. 70·5 grains (4·57 grammes). (b) Paris Cabinet, No. 5121.

109 δ. *Obv.*—Same as preceding except that a prow takes the place of the bunch of grapes.

Rev.—Kantharos, as on type No. 108 ε, on plain exergual line. Around HM IACC APION ↻. Border of dots.

Æ. ↑↓ 16·50 mm. 37·4 grains (2·42 grammes). (b) My collection, bought in Chios.

109 ε. *Obv.*—Same as preceding except that Sphinx wears *modius*.

Rev.—Amphora, as on No. 108 δ, with ΔΧΛΟ to l. and ΙΑΚΝ to r. Border of dots.

Æ. ↑↓ 18·00 mm. 39·4 grains (2·55 grammes). (g) Berlin Cabinet, published *Monn. grecques*, No. 144. [Pl. I. 10.]

↑↓ 16·00 mm. 31·7 grains (2·05 grammes). (m) Munich Cabinet.

110 α. *Obv.*—Sphinx of good style seated r. on plain exergual line, wing more conventionally rendered than on preceding issues, raising nearer forepaw over prow. In exergue TPIA, above AC CA PIA ↶. Border of dots.

Rev.—Same as type No. 109 α. Some issues have a star in exergue.

Æ. ↑↓ 33·25 mm. 300·7 grains (19·49 grammes). (g) Paris Cabinet, No. 5155. [Pl. I. 11.]

Twenty other specimens known with sizes varying from 34·00 to 30·00 mm., and weights from 292·3 to 180·6 grains (18·94–11·70 grammes), all showing the die-position ↑↓ except two ↑↑ (four pierced). Brit. Mus. Cat. Ionia, Chios, Nos. 122–5, Paris Cabinet, Nos. 5156 and 5158, &c. (On one of these, No. 57 of the Hunterian Coll., the obverse inscription is arranged AC CAP IA ↶ above the Sphinx, and the figure of Dionysus on the reverse does not hold a thyrsus.)

110 β. *Obv.*—Same as preceding, but inscription reads O in exergue, and BO ΛO C ↶ above Sphinx.

Rev.—Same as on type No. 108 β except that a helmet is placed to l. near the figure's feet. Some issues have a star in a similar position to r.

Æ. ↑↓ 29·75–24·50 mm. 200·0–110·9 grains (12·96–7·19 grammes). Paris Cabinet, No. 5170, Brit. Mus. Cat. Ionia, Chios, Nos. 108–9, Hunterian Coll., No. 52, &c. Twelve specimens in all (one pierced).

110 γ. *Obv.*—Same as preceding except that inscription reads XI ΩN ↷ above Sphinx, and that an upright amphora takes the place of the prow before it. In exergue club, handle to r.

Rev.—Similar to type No. 109 β except that inscription reads A CCAP ION HMYC Y ↻, and that each ivy-leaf of wreath is separated from the next by two small dots, between the topmost pair of which hangs the bunch of grapes. Two stars in the field, one r. and one l.

Æ. ↑↓ 24·75 mm. 127·2 grains (8·24 grammes). (g) Berlin Cabinet.

↑↓ 23·00 mm. 100·6 grains (6·52 grammes). (m) Munich Cabinet.

110 δ. *Obv.*—Same as preceding except that inscription reads XI Ω N ↶ above Sphinx, that a bunch of grapes takes the place of the amphora, and that Sphinx is generally seated on a club, handle r. One issue has a plain exergual line.

Rev.—Same as type No. 109 γ ACCA PION, except that some issues have a star in field r. and some two stars, one r. and one l.

Æ. ↑↓ and ↑↑ (two specimens) 21·50–19·00 mm. 111·6–68·7 grains (7·23–4·45 grammes). Brit. Mus. Cat. Ionia, Chios, No. 127, Hunterian Coll., No. 60, Paris Cabinet, No. 5119, &c. Eight specimens in all, weight of one not known.

110 ε. *Obv.*—Same as preceding except that a prow takes the place of the bunch of grapes, that the exergual line is always plain, and that all issues have a star in the exergue.

Rev.—Kantharos, as on type No. 108 ε. Around ΗΜΙΑCCΑΡΙΟΝ or ΗΜΙΑCΑΡΙΟΝ variously arranged, generally ↻. Border of dots.

Æ. ↑↓ 17·00–15·00 mm. 52·2–35·5 grains (3·38–2·30 grammes). Paris Cabinet, No. 5130, Sir H. Weber's Coll., &c. Eight specimens in all.

110 ζ. *Obv.*—Same as preceding, but star in exergue not constant.

Rev.—Amphora, as on No. 110 δ, with stars to r. and l. and ΔΙΧΑΛ r., ΚΟΝ l., both downwards. Border of dots.

Æ. ↑↓ 17·00 mm. 51·5 grains (3·34 grammes). (g) Brit. Mus. Cat. Ionia, Chios, No. 113.

Five more specimens known with sizes varying from 16·00 to 15·00 mm., and weights from 49·3 to 33·8 grains (3·20–2·19 grammes), all showing the die-position ↑↓. Hunterian Coll., No. 53, Berlin Cabinet (*Monnaies grecques*, No. 143), &c.

110 η. *Obv.*—Same as preceding.

Rev.—Homer seated r. on chair with straight back unrolling volumen with both hands. Around ΟΜΗΡΟC ↶, variously arranged. Border of dots.

Æ. ↑↓ 18·00 mm. 51·5 grains (3·34 grammes). (g) Hunterian Coll., No. 68. [Pl. I. 12.]

Four more specimens known with sizes varying from 18·75 to 17·00 mm., and weights from 68·1 to 52·0 grains (4·41–3·37 grammes), all showing the die-position ↑↓. Paris Cabinet, No. 5115, &c.

111. *Obv.*—Sphinx of rather coarser style than that of No. 110, head larger, wing more upright, seated l. on plain exergual line and raising farther forepaw over prow. In exergue ΤΡΙΑ, above ΑC CA PIA ↶. Border of dots.

Rev.—Same die as Paris Cabinet, No. 5158 of type No. 110 *a*.

Æ. ↑↓ 32·00 mm. 224·4 grains (14·54 grammes). (g) Paris Cabinet, No. 5157. [**Pl. I. 13.**]

No. 108. *Three-assaria, Obol, One-and-a-half-assarion, Assarion,* and *Half-assarion.* This type is connected with the three-assaria pieces, Nos. 105–6, by the shape and position of the Sphinx's wing and by its straddled foreleg, the latter feature having already been noted on the small denomination of type No. 107.

Otherwise the appearance of these coins is a great improvement on all those so far described, especially in the case of the obol and the denominations below it. The three-assaria pieces that have survived seem to belong to a slightly earlier issue, though clearly of the same type as the smaller ones. A minor point in illustration of this is the drawing of the Sphinx's tail, which on the three-assaria terminates stiffly in a knob as on all the coins of sub-period *a*, but on the smaller pieces is elegantly curved with a tuft at the end [**Pl. I. 2, 11**]. The coins are in higher relief than any other imperial issue. The prow is less extravagantly formed and better placed than on the earlier issues, though it has not yet reached its full development. The amphora on the reverse of the assarion is quite well drawn, and an agreeable contrast to its immediate predecessors.

Although there is not the same justification for regarding the club on the one-and-a-half-assarion of this type in the light of a separate symbol, as on type No. 110 *γ*, its presence on the assarion, at least, in addition to the prow, repeats the use made of it on types Nos. 95 and 100.

The die-position ↑↑, to which reference was made under type No. 107, is confined here to the two specimens of the one-and-a-half-assarion denomination.

No. 109. *Three-assaria, One-and-a-half-assarion, Assarion, Hemiassarion,* and *Dichalkon.* This type is rarer than the last, and its proper place in the series is not quite apparent at first sight. It possesses no direct connecting link with No. 108, but some of its features strongly favour the position assigned to it between that type and No. 110. Its style is, if anything, superior to that of No. 108, as exemplified by the drawing of the prow, which is now at its best, and by the conscientious way in which the Sphinx's farther hind paw is shown in perspective behind the nearer. These points are both to be observed on type No. 110, but, as the latter is so closely related through No. 111 with the manifestly later types of sub-period γ, it cannot have preceded the present type.

The condition of the unique three-assaria piece at Vienna is too bad to allow of illustration, but enough can be seen of the reverse to make it clear that the gods stand full-face and that there is an altar between them. The altar is a new feature in the design, since this reverse was first noted under types Nos. 105–6, but it never fails to appear on any subsequent issue until the time of sub-period δ, when, as already observed, the gods' heads are once more represented facing inwards on certain issues. Three-assaria pieces, in short, without the altar, and, except for one issue in sub-period γ, with the gods' heads in profile, are either early or late.

The one-and-a-half-assarion with an ivy-wreath on the reverse approximates more to the same denomina-

tion of type No. 110, and the issues of sub-period γ, than to that of type No. 108, which is without a wreath like Nos. 96 β and 104 β.

The amphora, too, on the reverse of the assarion is of a later type than any so far described, being drawn so as to show the opening of the mouth as if seen from above. This mannerism will be seen to characterize all subsequent issues on which an amphora appears. The same object on the dichalkon, however, seems to follow the earlier and more conventional pattern of types Nos. 100–2, to which No. 108 δ belongs.

The die-position ↑↑ does not occur on any denomination of this type.

No. 110. *Three-assaria, Obol, One-and-a-half-assarion, Assarion, Hemiassarion, Dichalkon,* and *no denomination.* The group of coins now to be described is of quite as good style as the last, though very different in design, and provides the most complete range of denominations extant, including at least two issues of Homereia. It is interesting to compare the drawing of the reverse on the last-named variety with that of types Nos. 98–9. Another instance of the care with which the dies for the present type seem to have been cut is the separate lock of hair that hangs over the Sphinx's breast from the farther side of its neck. This detail first appeared on the three-assaria of type No. 108, but here every denomination shows it without exception.

The rareness of the one-and-a-half-assarion is particularly noticeable in a group which is otherwise so well represented in our collections. The two specimens known seem to belong to the latest issues of the type, of which there must have been a considerable number.

The differences between one issue and another are too slight to be noted here apart from the club and star in the exergue of some of them, but it may be remarked that on the earliest pieces the Sphinx's wing is nearly parallel with the ground-line, and gradually seems to have become more upright. The club and star may in this case, I think, be looked upon as separate symbols, or rather mint marks, like the Π of type No. 107. The club does not occur again, but though the star is to be seen on the reverses of one denomination or another of practically all the succeeding types it is never placed in the exergue, and is probably only to be regarded henceforth in the nature of an ornament.

It will be noticed that the die-position ↑↑, which is rare in this sub-period, is found exceptionally on the three-assaria and the assarion.

No. 111, *Three-assaria*, is an interesting link between the last type and the coins that I am attributing to the next sub-period.

While of coarser execution, as exemplified by the large head and paws of the Sphinx, the obverse is designed on the same general lines as that of No. 110—witness the separate lock of hair—and shows the characteristic inverted lettering. On the other hand, the Sphinx raises its farther forepaw instead of the nearer, in which particular type No. 110 departed from the precedent established by all its predecessors. The wing of the Sphinx is still more upright than on the later issues of No. 110, and is the undoubted forerunner of the more clumsily drawn wing of types Nos. 112–13. The reverse of the coin, as already observed, is from the same die as the Paris specimen

No. 5158, which represents one of the late issues of type No. 110 *α*.

Sub-period *γ*.

This sub-period consists principally of the coins issued by the magistrate Q. Valerius Primus during his two terms of office. There are two issues without a magistrate's name which, from the style of their obverses, must have been near contemporaries of the others included in this group. In speaking of issues without magistrates' names it must be borne in mind that, unlike the coins of sub-period *α* (see types Nos. 96 *β* and 97 *β*), it seems to have been found inconvenient at this time to inscribe the magistrate's name on any denomination smaller than the two-assaria. Types Nos. 114 *β*, 115–16, and 121 *β* of the following list are intended, therefore, to be taken as belonging to the same group, if not to the same issue, as the larger coins preceding them. I am placing one of these nameless issues at the beginning of the sub-period, since it is impossible to say whether it preceded or followed the coins struck during Primus's first magistracy. It certainly did not follow those of the second term, and the arrangement adopted secures the best continuity for the different types. The other nameless issue can be shown to be a comparatively late one, and it will accordingly be found at the end of the sub-period.

Although the issues of this sub-period are fairly plentiful they cannot from the nature of things fill the space of thirty odd years that is assigned to them. As has already been stated, however, the moment when the reduction of standard took place that separates

this sub-period from the next is quite uncertain. No historical event can be indicated as likely to have caused the reduction, though it seems possible that the age following the reign and liberality of Hadrian may have been a comparatively poor one in the remote provinces, and so necessitated economy in the bronze needed for coinage. In view of this uncertainty I cannot do otherwise than fix a date more or less at random, and the one chosen seems at least to present no serious objection.

It is once more fairly easy to follow the order of the different issues, the fixed points afforded by the two distinct periods of magistracy, and certain interchanges of dies, being of considerable help. The total number of coins represented in this sub-period is about one-third greater than in the last, but it will be seen that they are divisible into three times as many types. Though this may mean that more issues were made, it seems possible that coins with more or less varying obverses now formed part of the same issue, unlike the uniform series Nos. 108–10.

The method, generally followed in imperial times, of writing the magistrate's name in the genitive case with a preposition, will be found on all the Chian issues with names from this time onwards. The particular form of phrase adopted is ΕΠΙ ΑΡΧ, or, on most of the later issues, ΕΠ ΑΡ followed by the name in full.

The coins are of about the same size as those of sub-period β, except the dichalka, which are noticeably smaller, and the earlier ones at least show considerable care in workmanship, though the style is inferior. The chief features of interest are the sub-

stitution for the obol of the piece of two-assaria, and the momentary appearance of a tetrachalkon. The two smallest denominations are rare, but the Homereia are more plentiful than at any other period.

The amphora reverse type for the three-assaria is resumed on the earliest issues of this group, and the kantharos for the two-assaria (see obols of sub-period *α*) on the latest.

112. *Obv.*—Sphinx as on type No. 111, but with more conventionally shaped wing and no separate lock of hair on neck, seated r. on plain exergual line and raising farther forepaw over prow. In exergue ΤΡΙΑ ; above, traces of ΑCCΑΡΙΑ ⌒. [Border of dots.]

Rev.—Amphora, as on type No. 109 *γ*, in wreath with ΧΙ l. and ΙΝ r. A large eight-rayed star also in field r. and l. [Border of dots.]

Æ. ↑↓ 29·00 mm. 237·7 grains (15·40 grammes). (b) Munich Cabinet.

113 *α*. *Obv.*—Same as preceding, ΑC CA PIA ⌒ above.

Rev.—Same as preceding, but in place of wreath ΕΠΙΑΡΧΚΟΟ ΥΑΠΡΕΙΜΟΥ Ω.

Æ. ↑↓ 31·50–30·50 mm. 269·0–186·9 grains (17·43–12·11 grammes). Brit. Mus. Cat. Ionia, Chios, Nos. 115–16, Paris Cabinet, Nos. 5161–2, and Berlin Cabinet (one specimen).

113 *β*. *Obv.*—Same as preceding.

Rev.—Same as preceding, but in place of the ties at either side of amphora's foot (as noted on type No. 100) a group consisting of two ears of corn with a poppy-head between them. Inscription has stops ΕΠΙΑΡΧ·ΚΟ·Ο ΥΑ·ΠΡΕΙΜΟΥ Ω, and the stars are smaller.

Æ. ↑↓ 33·00–31·50 mm. 278·8–214·7 grains (18·07–13·91 grammes). Berlin Cabinet and my collection (one specimen each), Paris Cabinet. No. 5160, pierced.

113 γ. *Obv.*—Same as preceding.

Rev.—Apollo and Dionysus facing with altar as on type No. 110 α, but ΕΠΙΑΡΧΚΟ ΟΥΑ ΠΡΕΙΜΟΥ Ω around, and ΧΙΛΝ in exergue. The whole in border of dots.

Æ. ↑↓ 33·00 mm. 263·4 grains (17·07 grammes). (g) Vienna Cabinet.

↑↓ 32·50 mm. 240·7 grains (15·60 grammes). (g) Paris Cabinet, No. 5150, pierced. [Pl. II. 1.]

114 α. *Obv.*—Sphinx seated r. similar to preceding, but with short hair falling on neck instead of the usual chignon, wing a trifle more curled, and nearer forepaw raised over prow instead of farther. Above AC C APIA ⌒. In exergue ΔΥΟ. Border of dots.

Rev.—Full-length nude figure of a hero facing, as on type No. 108 β, but ΕΠΙΑΡΧΚΟΟΥ ΑΠΡΕΙ-ΜΟΥ Ω around, and no star to r.

Æ. ↑↓ 27·00 mm. 159·0 grains (10·30 grammes). (m) Paris Cabinet, No. 5145.

↑↓ 26·50 mm. 125·6 grains (8·14 grammes). (g) Munich Cabinet. [Pl. II. 2.]

114 β. *Obv.*—Same as preceding, but ΧΙ Λ Ν ⌒ above, and Sphinx raises nearer forepaw over amphora.

Rev.—Two thyrsi crossed in ivy-wreath as on No. 109 β. Within wreath ΑCCAP ΙΟΝΗΜ ΥCY Ω.

Æ. ↑↓ and ↑↑ (one specimen) 157·3–101·1 grains (10·19–6·55 grammes). Vienna Cabinet, Paris Cabinet, No. 5122, Brit. Mus. Cat. Ionia, Chios, No. 126, Hunterian Coll., No. 59, &c. Twelve specimens in all (one pierced). (One specimen in the Chios Library Coll. has two stars in field.)

115 α. *Obv.*—Sphinx seated r. as on type No. 113, but raising nearer forepaw over bunch of grapes. Above Χ Ι ΛΝ ⌒. Border of dots.

Rev.—Amphora as on type No. 109 γ with ACCA PION ⌒ above, an eight-rayed star in field r. and l., and on either side of foot the ties properly associated with the wreath of type No. 112, &c. Border of dots.

Æ. ↑↑ 20·50 mm. 76·6 grains (4·96 grammes). (g) Hunterian Coll., No. 62. [Pl. II. 3.]

115 β. *Obv.*—Same as preceding.

Rev.—Same as preceding without ties and with inscription arranged ACCAP IO N Ω around.

Æ. ↑↓ 20·50–20·00 mm. 85·2–73·0 grains (5·50–4·73 grammes). Paris Cabinet, No. 5118, Athens Cabinet, and Aberdeen University.

116. *Obv.*—Similar to type No. 113 with XI Ω N ⌒ above.

Rev.—Same as preceding, but no stars in field, and ΔIXA l. upwards, ΛKON r. downwards.

Æ. ↑↓ 14·75 mm. 36·1 grains (2·34 grammes). (g) My collection, probably ex Whittall Collection.

↑↑ 14·50–14·00 mm. 31·9–23·3 grains (2·07–1·51 grammes). Brit. Mus. Cat. Ionia, Chios, No. 114, and Berlin Cabinet (two specimens).

117 a. *Obv.*—Badly proportioned Sphinx (long legs and neck) seated l. on plain exergual line, raising farther forepaw over prow. Above ACC AP IA ⌒. In exergue TPIA. Border of dots.

Rev.—Apollo and Dionysus facing with altar as on type No. 113 γ, but in smaller dotted border. Around ΕΠΙΑΡΧΚΟ ΟΥΑΠΡΕΙΜΟΥ Ω. In exergue XIΩN.

Æ. ↑↑ 32·00 mm. 269·0 grains (17·43 grammes). (m) Brit. Mus. Cat. Ionia, Chios, No. 118, pierced.

↑↑ 31·75 mm. 251·3 grains (16·28 grammes). (m) Paris Cabinet, No. 5152, pierced.

117 β. *Obv.*—Similar to preceding, but AC CA PIA ⌒ above and ΔYO in exergue.

Rev.—Same as type No. 114 α, but inscription reads ЄΠIAPXKOO YAΠPЄIMOY Q.

Æ. ↑↓ and ↑↑ (two specimens) 27·00–25·50 mm. 160·5–115·3 grains (10·40–7·47 grammes). Vienna Cabinet, Paris Cabinet, No. 5146, Hunterian Coll., No. 55, Berlin Cabinet (two specimens), and my collection. (One of the Berlin specimens has a star on r. of figure's feet.)

118. *Obv.*—Same as type No. 113 γ. AC CA PIA ⌒ above and TPIA in exergue.

Rev.—Apollo and Dionysus with altar as before, but heads facing inwards. Around ЄΠI AP XΠP ЄIMOYΔIC Q. In exergue XIΛN. Border of dots.

Æ. ↑↓ 30·50 mm. 277·0 grains (17·95 grammes). (g) Brit. Mus. Cat. Ionia, Chios, No. 119.

↑↑ 31·75 mm. 251·7 grains (16·31 grammes). (m) Paris Cabinet, No. 5151.

↑↓ 33·00 mm. 228·6 grains (14·81 grammes). (m) Hunterian Coll., No. 54.

↑↓ 31·00 mm. 194·6 grains (12·61 grammes). (g) Berlin Cabinet.

(Nos. 2 and 3 from same *obv.* die as Paris Cabinet, No. 5150 of type No. 113 γ.)

119. *Obv.*—Same as preceding.

Rev.—Same as type No. 113 β, but inscription reads ЄΠIAPXΠP ЄIMOYΔIC Q around.

Æ. ↑↓ 32·00 mm. 291·5 grains (18·89 grammes). (m) Paris Cabinet, No. 5159.

↑↓ 31·25 mm. 243·8 grains (15·80 grammes). (g) My collection.

↑↓ 32·00 mm. 238·1 grains (15·43 grammes). (m) Vienna Cabinet.

(Nos. 1 and 2 from same *obv.* die as Paris Cabinet, No. 5160 of type No. 113 β.)

120. *Obv.*—Same as type No. 114 *a*. AC C APIA ⌒ above and ΔYO in exergue.

Rev.—Same as type No. 114 *a*, but inscription reads ЄΠΙΑΡΧΠΡ ЄΙΜΟΥΔΙC Ω around.

Æ. ↑↓ 26·75–25·50 mm. 178·1–126·0 grains (11·54–8·16 grammes). Paris Cabinet, No. 5141, pierced, Brit. Mus. Cat. Ionia, Chios, No. 121, Berlin Cabinet (two specimens), and E. Shepherd's Coll.

(Paris specimen from same *obv.* die as that Cabinet's No. 5145 of type No. 114 *a*.)

121 *a*. *Obv.*—Coarsely executed Sphinx, similar to that on types Nos. 112–13, seated l. on plain exergual line, raising nearer forepaw over prow. Above AC CA PIA ⌒. In exergue TPIA. Border of dots.

Rev.—Short amphora, showing open mouth, in laurel-wreath tied below with X/Ω l. and I/N r. Around ЄΠΙΑΡΧΠ ΡЄΙ MOY ΔΙ C Ω. The whole in border of dots.

Æ. ↑↓ 32·00 mm. 212·2 grains (13·75 grammes). (g) E. T. Newell's Coll. [Pl. II. 4.]

Five more specimens known with sizes varying from 33·00 to 31·50 mm., and weights from 302·0 to 216·5 grains (19·57–14·03 grammes), all showing the die-position ↑↓. Brit. Mus. Cat. Ionia, Chios, No. 117, Leake Coll., Fitzwilliam Mus., Cambridge, Paris Cabinet, No. 5164, Dr. Imhoof-Blumer's Coll., 1912, and Berlin Cabinet.

121 *β*. *Obv.*—Same as preceding, but Sphinx raises forepaw over amphora and inscription reads X I Ω ⌒ above and N in exergue, or X I ΩN ⌒ above.

Rev.—Two thyrsi crossed in ivy-wreath as on type No. 114 *β*. Within wreath ACCAP IONH MYCY Ω, or ACCA P I ONHM YCY Ω.

Æ. ↑ ? 23·00 mm. 122·9 grains (7·96 grammes). (g) Coll. B. Yakountchikoff.

↑↓ 24·25 mm. 117·6 grains (7·62 grammes). (g) Paris Cabinet, No. 5123, pierced.

↑↓ 24·50 mm. 102·0 grains (6·60 grammes). (b) Athens Cabinet.

122. *Obv.*—Similar to No. 121 *a*, though of still ruder style, with ACC AP IA ↷ above and TPIA in exergue.

Rev.—Apollo and Dionysus facing with altar as on type No. 113 *γ*, but between their heads a crescent horns upwards, and ΕΠΙ ΑΡΧ ΠΡΕΙ ΜΟΥΔΙC Ω around, and XIΩN in exergue. The whole in border of dots.

Æ. ↑↓ 32·25 mm. 268·4 grains (17·39 grammes). (m) McClean Coll., Fitzwilliam Mus., Cambridge.

↑↓ 31·50 mm. 267·1 grains (17·31 grammes). (b) My collection. (The *obv.* of this coin is from the same die as Mr. E. T. Newell's specimen of type No. 121 *a*, with AC CA PIA ↷ above.)

123. *Obv.*—Similar to preceding, but Sphinx raises farther forepaw over prow. Above ACC AP IA ↷, in exergue ΔYO. Border of dots.

Rev.—Same as type No. 120, and one issue of much inferior style.

Æ. ↑↓ 27·50 mm. 157·6 grains (10·21 grammes). (g) McClean Coll., Fitzwilliam Mus., Cambridge.

↑↓ 30·00–27·5 mm. 163·6–118·1 grains (10·60–7·65 grammes). Paris Cabinet, No. 5140, Brit. Mus. Cat. Ionia, Chios, No. 120, pierced, Athens Cabinet, and my collection, probably ex Whittall Coll. (Nos. 1, 3, and 4 show the inferior reverse.)

124 *a*. *Obv.*—Same die as that of McClean Coll. specimen of type No. 123.

Rev.—Kantharos in ivy-wreath tied below and terminating above in two thyrsus-like knobs. In field l. X Ω r. I N.

Æ. ↑↓ 29·25 mm. 166·6 grains (10·80 grammes). (m) Paris Cabinet, No. 5131. [Pl. II. 5.]

↑↓ 25·50 mm. 160·0 grains (10·37 grammes). (b) Hunterian Coll., No. 58, pierced.

(There is a third specimen of this issue at Munich, the weight of which I have failed to record.)

124 β. *Obv.*—Same as preceding, but XI ∩ N ⌒ above.

Rev.—Amphora as on type No. 115 β with ACCA PION Q around.

Æ. ↑↓ 22·25 mm. 77·6 grains (5·03 grammes). (g) Paris Cabinet, No. 5120.

↑↓ 22·00–20·00 mm. 107·2–64·0 grains (6·95–4·15 grammes). Vienna Cabinet, Hunterian Coll., No. 61, Berlin Cabinet, &c. Twelve specimens in all. (Some of these have the ties of type No. 115 α as well as the stars on *rev.*, some the ties only, and some neither the one nor the other.)

124 γ. *Obv.*—Same as preceding.

Rev.—Bunch of grapes. Around ΤΕΤΡΑΧ ΑΛΚΟΝ or ΤΕΤΡΑ ΧΑΛΚΟΝ Q. The whole in border of dots.

Æ. ↑↑ 16·00 mm. 45·4 grains (2·94 grammes). (g) My collection. [Pl. II. 6.]

↑↑ and ↑↓ (four specimens) 17·00–15·00 mm. 47·8–32·7 grains (3·10–2·12 grammes). Brit. Mus. Cat. Ionia, Chios, Nos. 110–11, Paris Cabinet, No. 5174, &c. Eleven specimens in all.

124 δ. *Obv.*—Same as preceding.

Rev.—Kantharos with HMIAC APION Q around. The whole in border of dots.

Æ. ↑↓ 14·00 mm. 27·3 grains (1·77 grammes). (g) Berlin Cabinet. [Pl. II. 7.]

↑↓ 15·75–14·75 mm. 37·5–29·6 grains (2·43–1·92 grammes). Rev. E. Rogers's Coll., Berlin Cabinet, and my collection.

124 ε. *Obv.*—Same as preceding.

Rev.—Amphora as on type No. 123 γ with ΔΙΧΑ l. upwards, and ΛΚΟΝ r. downwards. Border of dots.

Æ. ↑↑ 14·00 mm. 28·7 grains (1·86 grammes). (m) My collection, bought in Chios.

124 ζ. *Obv.*—Same as preceding except that Sphinx generally raises its farther forepaw over amphora.

Rev.—Homer seated r. on chair with straight back unrolling volumen with both hands. On volumen, in small letters, ΙΛΙ / ΑC·. Around ·O· ΜΗΡΟC, ΟΜ ΗΡΟC Ω, or ƆΟϤ ΗΜΟ Ω. Border of dots.

Æ. ↑? 17·00 mm. 43·2 grains (2·80 grammes). (g) Dr. Imhoof-Blumer's Coll., 1912. [Pl. II. 8.]

↑↓ and ↑↑ (two specimens) 17·50–15·00 mm. 52·8–29·5 grains (3·42–1·91 grammes). Brit. Mus. Cat. Ionia, Chios, Nos. 140–1, Hunterian Cat., Nos. 69–70, Paris Cabinet, Nos. 5113–14, &c. Seventeen specimens in all, of which only two, Brit. Mus., No. 141, and Munich, have prow on *obv.* and the weight of one not recorded.

No. 112. *Three-assaria.* I have already given my reasons for placing this unique coin at the beginning of this sub-period. Being very much worn it cannot be reproduced, but its obverse is apparently identical with that of the next type [Pl. II. 1]. Compared with the other transitional piece, type No. 111, the style of this one is a good step farther removed from the superior work of sub-period β. The prow is less well drawn, recalling the treatment followed for rendering this object in sub-period α, and the separate lock of hair is no longer displayed on the Sphinx's neck. On the other hand, the dies seem to have been carefully, if

less artistically, cut, and the weights are well maintained. The niceties of style that are still preserved are the curves of the Sphinx's tail and the indication of its farther hind paw behind the nearer, but these features remain constant even on the much inferior work belonging to the end of the sub-period.

The reverse is a revival of that last used on types Nos. 101–2 with certain modifications, among which of course is the later form of amphora first noted on type No. 109 γ.

No. 113. *Three-assaria.* These three varieties with the name ΚΟ[ΙΝΤΟϹ] ΟΥΑ[ΛΕΡΙΟϹ] ΠΡΕΙΜΟϹ may or may not be the first issues of this magistrate. The style of the obverse, like that of the last-named type, seems to me to be better than either that of type No. 114 or No. 117, which have just as good a claim to priority from every other point of view. This, combined with the difficulty of assigning an intermediate position to the nameless issue No. 112, has decided me to arrange the coins in the order here given. If any doubt existed as to the proper reading of the magistrate's name it would be resolved by the stops used on No. 113 β. This is the only issue known to me that shows this device in the present series, though it becomes common enough in the next sub-period.

No. 114. *Two-assaria* and *One-and-a-half-assarion.* The Sphinx of this type is also turned to the right like the last, but lifts the nearer forepaw and has quite a different appearance. In spite of this it seems possible that these two denominations, which obviously belong to the same issue themselves, may possibly have accompanied the preceding three-assaria.

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No. 115. *Assarion.* This type with two different reverses comes pretty close to Nos. 112–13 as regards the general appearance of the Sphinx, although its attitude conforms to that of the last type. I think it may safely be considered a contemporary of the foregoing. The reverse of the unique specimen from the Hunterian Cabinet shows a curious bit of convention in repeating the loops or ties at the foot of the amphora that properly belong to the wreath of the three-assaria pieces (see description of type No. 100).

No. 116, *Dichalkon*, is perhaps the most doubtful of the coins that I have decided to associate with type No. 113. In one respect its obverse more closely resembles that of the three-assaria pieces than does the assarion, No. 115, since it is the Sphinx's farther forepaw that is raised in this case. On the other hand, the arrangement of the lettering on the obverse is the same as that on the group placed at the end of this sub-period, type No. 124 β–ζ, and the Sphinx's upright foreleg, drawn inwards instead of straddled, is more like the same feature on all the later types from No. 121 onwards. The prevalence of the die-position ↑↑ is also more characteristic of the latter portion of the sub-period than of the former—see type No. 124 γ—but very little importance can be attached to the evidence of die-positions at this time. Apart from the total absence of ↑← the arrangement seems to have been quite haphazard.

Still, as all the late types except Nos. 118–20 (for which see remarks below) have the Sphinx to left, there is some justification for assuming that the present issue of dichalka accompanied the coins that record the first magistracy of ΠΡΕΙΜΟC.

No. 117. *Three-assaria* and *Two-assaria*. This type, like No. 114, is another distinctive issue. The nearer foreleg of the Sphinx shows the straddled attitude of Nos. 111–13 in an exaggerated form, but its other traits, especially its long ungainly neck, are more in keeping with the bulk of the coins belonging to the second magistracy and after. The reverse types give no help in determining the position that this issue occupied in the group under examination, since they are quite distinctive like the obverses, and no interchange of dies can have taken place with any other known issue.

The coins in question, especially the three-assaria denomination, are comparatively rare for this period, and none of the specimens that I have seen is sufficiently well preserved for reproduction.

Nos. 118–20. *Three-assaria* and *Two-assaria*. Whatever may be thought about the order in which types Nos. 112–17 should be arranged, there can be very little doubt that these three types must have been the earliest of those struck with the inscription **ΕΠΙΑΡΧ ΠΡΕΙΜΟΥΔΙC**. In each case there was a reversion to the obverse types of what I have called the first issues of the first magistracy, and from a comparison of dies it is clear that some of the earlier ones were used for these coins in conjunction with the new reverses. In fact, it is more than probable that all the obverse dies were old ones, as the other types of this group all show a falling off in style, and if my attributions are correct some of the coins that preceded these were also of inferior workmanship. The reverses also of types Nos. 118 and 120 are inferior to the corresponding ones on the earlier issues.

No. 121. *Three-assaria* and *One-and-a-half-assarion.* The deterioration characterizing the work that was now being produced is well exemplified by the style of these coins, especially by that of their obverses. The drawing of the prow alone shows it clearly [**Pl. II. 1 and 4**]. There can be no reasonable doubt that the one-and-a-half-assarion belongs to the same issue as the three-assaria.

No. 122, *Three-assaria,* is remarkable in providing the last instance of a separate symbol on the Chian coinage. I refer to the crescent between the heads of the gods on the reverse, the meaning of which is not at all obvious. If it is a mint mark it is curious that it should not have been observed on some previous issue, but as a matter of fact it has only appeared once before, on the late drachm with **ΡΑΒΙΡΙΟΣ**, when it was almost certainly employed as a magistrate's symbol.

It is worthy of note that, though only two specimens of the type are known to me, each should have been struck from quite a different obverse die, the coin in my collection being probably the earlier of the two. The type is clearly a link between Nos. 121 and 123, the arrangement of the obverse lettering on the Cambridge specimen, **ACC AP IA** in place of **AC CA PIA**, being the same as that on the two-assaria types, Nos. 123 and 124 *a*.

No. 123. *Two-assaria.* The obverse of this type is slightly more degraded than the last, but it seems highly probable that they formed part of the same issue as has been suggested in the case of Nos. 113 and 114 *a*. The main difference between the obverses of

the two denominations is the same in both groups, the Sphinx raising its nearer forepaw on the three-assaria and its farther one on the two-assaria.

There are two well-defined reverse dies belonging to this type, one of which is markedly inferior in style to the other. It has not been possible to illustrate it, though it affords a good instance of the barbarous work that was now being produced. It is not so easy as a rule to trace the slight differences that occur in the development of the varying reverses, even where figures are concerned, as in that of the ever-recurring Sphinxes with their far greater opportunities for comparison.

No. 124. *Two-assaria, Assarion, Tetrachalkon, Hemi-assarion, Dichalkon,* and *no denomination.* The six varieties assembled under this type cannot definitely be ascribed to one and the same issue though their obverses are practically identical. There is no doubt whatever, I think, that all the coins belong to the very end of the present sub-period, but whether the small denominations, from the assarion downwards, should be classed with types Nos. 122–3, or with the two-assaria piece without a magistrate's name, or partly with one and partly with the other, it is impossible to decide. The two distinct obverse types on the Homereia suggest the last alternative for that particular variety at least.

The two-assaria piece bears witness, through its obverse, to an issue of coins without a magistrate's name having been made between the end of Primus's second magistracy and the time when the reduction of standard took place that divides this sub-period from the next. It will be noted that the two specimens

of which I have records both weigh more than the average not only of their contemporaries but also of the obols assigned to sub-period β.

The kantharos on the reverse has already been alluded to in the introduction with reference to the continuity of types.

It seems unlikely that this should have been the only issue of tetrachalka, yet it is certainly the only one that has survived.

The Homereia are of interest as illustrating, in addition to the instances already given, the great falling off in the work of this sub-period as compared with that of the last [Pl. I. 12 and Pl. II. 8]. The third alternative form of lettering on the reverse is truly retrograde, an allusion doubtless to the antiquity of the subject, and not the inverted style of types Nos. 110–11. The word ΙΛΙΑC, on the volumen, may not have been engraved on every issue, but there can be no doubt of its existence on Dr. Imhoof-Blumer's fine specimen. I cannot vouch for the presence of similar letters on any of the coins attributed to the two earlier sub-periods.

Sub-period δ.

The coins now to be described, the last products of the Chian mint, are both the easiest to attribute in a general sense and the most difficult to arrange in their particular order of all those struck in imperial times. The reduced weights are the chief and invariable characteristic of the whole group, and the comparatively small size of the flans is also typical of a large portion of it. Certain other features distinguish these issues from all their predecessors, such

as the spelling ΔΥΛ in place of ΔΥΟ, the form assumed by the letter V on all the coins of small module, and the misspelling ACAPIA on one particular group of the latter. The weights alone, which are no more than half those of the preceding sub-period on the average, make it easy to pick out any of these coins from the mass of imperial Chian issues.

On the other hand, with the exception of the first five types to be described, which on account of their larger size and slightly greater weight may be assumed to have been the first of those struck according to the new standard, I find it practically impossible to determine the probable order in which the coins of this sub-period were issued. Not only are the obverse types, especially of all issues included under Nos. 130–47, almost wholly distinct from one another, so that no hint can be gained as to their possible inter-development, but there are so many exchanges of dies among them, both obverse and reverse, that they only serve to increase the confusion. Even the issues bearing magistrates' names seem to be inextricably mixed up with those without them.

The style at first seems to have followed the downward tendency observed towards the end of the last sub-period till a very low level indeed was reached. Then, with the appearance of the types distinguished by their smaller size, a certain improvement in workmanship is to be remarked. The change both in style and fabric is so great that it can only be explained by supposing that a certain interval of time must have elapsed between the two groups in question. Type No. 137 introduces an heraldic-looking Sphinx with reverted head that offers a complete contrast to all its

forerunners and, whether rightly or wrongly, forms a fitting tail-piece to their long and almost unbroken line.

The coins are by far the most plentiful of the imperial series and the number of issues must have been very great. In fact, the minor varieties are so numerous, especially among the reverse types, that it would be both wearisome and unprofitable to record them all.

Two magistrates' names appear, ЄΙΡΗΝΑΙΟϹ among the larger pieces placed at the beginning of the sub-period, and ΑΥΡ·ΧΡΥϹΟΓΟΝΟϹ, sometimes with the added cognomen ΟЄΠΑ·Ι·ΡΟΔ(Є)ΙΤΟϹ, among the smaller ones with which the catalogue is closed.

The only denominations that occur are the three-assaria, the two-assaria, and the assarion, while contemporaneously with them were issued at one or other of the two mints concerned the well-known "alliance" pieces between Chios and Erythrae or Smyrna.

125. *Obv.*—Sphinx of very rude style, hair in chignon, wing springing from middle of back, seated l. on plain exergual line, and raising farther or nearer forepaw over prow. Around C[C]ΑΡΙ ΑΤ ΡΙΑ ↷, in exergue ΑΧΙΛΝ; or above [ΑCC] Α ΡΙΑ ↷, in exergue ΤΡΙΑ. The whole in border of dots.

Rev.—Apollo and Dionysus with altar as before but heads facing inwards. Around ЄΠ ΑΡ ΧЄΙ Ρ ΗΝΑ ↷, in exergue ΙΟΥ; or around ЄΠΙ ΑΡΧ ЄΙΡ ΗΝΑΙΟΥ ↷, in exergue ΧΙΛΝ. The whole in border of dots.

Æ. ↑↓ 31·25 mm. 115·6 grains (7·49 grammes). (g) Berlin Cabinet. [Pl. II. 9.]

↑↓ and ↑↑ 31·00–29·00 mm. 163·1–111·6 grains (10·50–7·23 grammes). Paris Cabinet, No. 5154, Munich Cabinet, Vienna Cabinet, &c. Six specimens in all. (The Munich specimen has no altar between gods on *rev.*)

126. *Obv.*—Similar Sphinx seated r. raising farther forepaw over prow. Around AC CAP IA ↷, in exergue TPIA. Border of dots.

Rev.—Same as preceding. Around ΕΠΙ ΑΡΧ ΕΙΡ ΗΝΑΙΟΥ ↷, in exergue XIΩN. Border of dots.

Æ. ↑↑ 29·50 mm. 139·1 grains (9·10 grammes). (g) Paris Cabinet, No. 5153.

↑↑ 29·00 mm. Wt. ? (b) Munich Cabinet.

127 *a*. *Obv.*—Same as type No. 125 with nearer forepaw raised. Above AC C API A or AC CA PIA ↷, in exergue TPIA. Border of dots.

Rev.—Amphora in conventional laurel-wreath with poppy-heads at foot, to l. X Ω to r. I N.

Æ. ↑↓ and ↑↑ 32·00–28·25 mm. 153·9–120·8 grains (9·97–7·83 grammes). Hunterian Coll., No. 65, Paris Cabinet, Nos. 5165–6 and 5168, &c. Ten specimens in all.

127 *β*. *Obv.*—Same as preceding, but Sphinx raises farther forepaw. Above AC C APIA ↷, in exergue ΔYΩ. Border of dots.

Rev.—Kantharos in ivy-wreath with X Ω l. and I N r.

Æ. ↑↓ 25·75–23·50 mm. 116·5–91·1 grains (7·55–5·90 grammes). Paris Cabinet, No. 5134, Berlin Cabinet, Sir H. Weber's Collection, and W. S. Lincoln's stock, 1913.

127 *γ*. *Obv.*—Same as preceding, but Sphinx raises farther forepaw over bunch of grapes. Above XIΩ ↷, in exergue N. Border of dots.

Rev.—Amphora with handles twisted like those of kantharos. To l. ACCA upwards, to r. PIOII (*sic*) downwards. Border of dots.

Æ. ↑↑ 20·00 mm. 49·7 grains (3·22 grammes). (g) My collection.

128. *Obv.*—Same die as that of Paris Cabinet, No. 5153, type No. 126.

Rev.—Same die as that of Paris Cabinet, No. 5166, type No. 127 *a*.

Æ. ↑↑ 27·75 mm. 152·0 grains (9·65 grammes). (g) My collection.

129. *Obv.*—Same as preceding.

Rev.—Similar to type No. 125, but without magistrate's name.

Æ. ↑↑ 29·50 mm. 127·6 grains (8·27 grammes). (b) Athens Cabinet.

130 *α*. *Obv.*—Sphinx, of more careful workmanship than preceding, seated r. on plain exergual line, hair arranged so as to show a peak in front as well as the usual chignon, nearer foreleg straddled, and raising farther forepaw over prow. Above ACC A PIA ⌒, in exergue TPIA. Border of dots.

Rev.—Apollo and Dionysus with altar as before, but heads facing to front. Around ЄΠA PAVXPV COΓO N ŎTOVЄΠA·I·POΔЄITOV Ɔ, the last seven letters in exergue. Between the gods XI ∩ N. Border of dots.

Æ. ↑↑ 26·00–25·25 mm. 115·0–96·3 grains (7·45–6·24 grammes). Paris Cabinet, No. 5149, Berlin Cabinet, Brit. Mus. recent acquisition, and my collection.

130 *β*. *Obv.*—Same as preceding, but AC C APIA ⌒ above and ΔV∩ in exergue.

Rev.—Single male figure facing as before, but no helmet in field l. Around, in two concentric circles, ЄΠIAPXAVPXVCOΓ ONŎTOV-ЄΠA·I·P OΔЄITOV XI∩N. Border of dots.

Æ. ↑↓ 24·00 mm. 81·0 grains (5·25 grammes). (m) Paris Cabinet, No. 5144. [Pl. II. 10.]

↑↓ 23·50 mm. 69·9 grains (4·53 grammes). (b) Berlin Cabinet.

131. *Obv.*—Sphinx in crouching attitude, with hair falling on shoulders in long curls, seated r. on plain exergual line and raising nearer forepaw over prow. Above ACCAP IA ⌒, in exergue TPIA and star to r. Border of dots.

Rev.—Same as type No. 130 *a*, but inscription reads ЄΠΑΡ AVPXPV COΓON Ȯ TOVЄΠA·I·P OΔЄITOV Ɔ, the last seven letters in exergue.

Æ. ↑? 26·50 mm. 92·4 grains (5·95 grammes). (g) Dr. Imhoof-Blumer's Coll.

132 *a*. *Obv.*—Same as preceding, but no star in exergue.

Rev.—Amphora standing on a short line between two ears of corn with a star in field above on either side. Around ЄΠΑΡX·AVP·XPV COΓO-NOV·XIΩN· Ɔ. Border of dots.

Æ. ↑↓ 27·75 mm. 108·0 grains (7·00 grammes). McClean Coll., Fitzwilliam Mus., Cambridge. [Pl. II. 11.]

↑↓ 26·00–24–50 mm. 131·9–98·9 grains (8·55–6·41 grammes). Paris Cabinet, No. 5138, W. S. Lincoln's stock, 1913, Vienna and Munich Cabinets. (The weight of last not known.)

132 *β*. *Obv.*—Same as preceding, but ΔVΩ in exergue.

Rev.—Single male figure facing as before, sometimes with helmet at feet to l. Around ЄΠΑΡX· AV·X PVCOΓONOV Q. In field l. X Ω r. I N. Border of dots.

Æ. ↑↓ 24·75–22·00 mm. 98·6–67·4 grains (6·39–4·37 grammes). Paris Cabinet, Nos. 5142–3, Berlin Cabinet (two specimens, on which the upper obverse inscription reads ACCAPA), and Leake Coll., Fitzwilliam Mus., Cambridge.

132 *γ*. *Obv.*—Same as preceding.

Rev.—Kantharos. Around ЄΠΑΡAVXP V CO-ΓONOVXI Q with Ω in field l. and N r., or ЄΠΑΡXPV COΓONOV Q with X Ω in field l. and I N r., the two upper letters within the handles of kantharos. Border of dots.

Æ. ↑↓ 25·00–22·00 mm. 110·0–47·8 grains (7·13–3·10 grammes). Paris Cabinet, Nos. 5135–6, Athens Cabinet, Berlin Cabinet, &c. Nine specimens in all, on some of which the misspelling ACAPIA occurs.

133 *a*. *Obv.*—Same die as type No. 131.

Rev.—Amphora similar to that on type No. 132 *a*, between two groups consisting of two ears of corn with a poppy-head between them, and a star in field on either side. To l. XI upwards, to r. ∩N downwards. Border of dots.

Æ. ↑↓ 28·50 mm. 128·7 grains (8·34 grammes). (m) My collection; probably struck on an old flan.

133 *β*. *Obv.*—Same as preceding, but ΔV∩ in exergue.

Rev.—Kantharos with star in field on either side of stem. To l. XI upwards, to r. ∩N downwards. Border of dots.

Æ. ↑↓ 24·50 mm. 69·4 grains (4·50 grammes). (m) Athens Cabinet.

134. *Obv.*—Same as type No. 131. ACCAP IA ⌒ above, and TPIA with star to r. in exergue.

Rev.—Apollo and Dionysus standing facing with altar. Around X I ∩ N ⌒. Star in exergue.

Æ. ↑↓ 28·00–26·00 mm. 140·7–100·3 grains (9·12–6·50 grammes). Berlin Cabinet (two specimens), Athens Cabinet (two specimens), and Dr. Imhoof-Blumer's Coll., the last specimen struck from the same obverse die as that of types Nos. 131 and 133 *a*.

135. *Obv.*—Same as preceding.

Rev.—Small amphora with ears of corn at foot standing in laurel-wreath tied below, and space between upper ends filled by a ring. In field l. X ∩, r. I N. The whole in dotted border.

Æ. ↑↓ 26·50–25·00 mm. 125·5–91·7 grains (8·13–5·94 grammes). Paris Cabinet, No. 5167, Berlin, Vienna, and Athens Cabinets, and Sir H. Weber's Coll. (one pierced).

136 *a*. *Obv.*—Similar to preceding, but Sphinx has hair in chignon and lifts nearer forepaw over amphora. Above X I ∩ ◠, in exergue N. Border of dots.

Rev.—Two thyrsi crossed in ivy-wreath composed of single leaves set in opposite directions from the top, where hangs a bunch of grapes. Within wreath ACCA PION HM Q and V C V ◠ part of inner circle, or ACA PI ONH MV Q and C V within. The whole in border of dots.

Æ. ↑↓ and ↑↑ (two specimens) 20·50–19·00 mm. 70·1–47·7 grains (4·54–3·09 grammes). Paris Cabinet, No. 5127, Brit. Mus. Cat. Ionia, Chios, Nos. 136 [Pl. II. 12] and 137, &c. Nine specimens in all. (One specimen at Athens was found in Delos during the excavations of 1906–8.)

136 *β*. *Obv.*—Same as preceding.

Rev.—Similar to preceding, but a dotted border takes the place of wreath, and inscription, in larger letters, reads ACCAP IONH MV around Q, and CV in field l. In field r. star, and bunch of grapes above.

Æ. ↑↑ 22·00–19·75 mm. 77·2–43·8 grains (5·00–2·84 grammes). Paris Cabinet, Nos. 5125 and 5128, Brit. Mus. Cat. Ionia, Chios, No. 138, &c. Seven specimens in all.

137. *Obv.*—Sphinx with two wings showing and head reverted, hair dressed in close curls, seated r. on plain exergual line, raising farther forepaw over prow. Around ACAPI A T P IA· Q, the last two letters and stop in exergue. Plain line or dotted border.

Rev.—Similar to that of type No. 132 *a*, but no stars in field. Around ЄΠAVPXPVCOΓON OV· TOVЄΠA·I·POΔ Q and ЄIT OV ·X IΩN· ◠ part of inner circle. Border of dots.

Æ. ↑↓ and ↑↑ 26·00–23·50 mm. 134·6–83·2 grains (8·72–5·39 grammes). Brit. Mus. Cat. Ionia, Chios, No. 128, Paris Cabinet, Nos. 5137 and 5139 [Pl. II. 13 for *obv.*], Vienna and Berlin Cabinets (three specimens in latter), and Sir H. Weber's Coll.

138 *α*. *Obv.*—Same as preceding.

Rev.—Similar to that of type No. 130 *α*, but around ΕΠΙ ΑΡΧ ΡΥ ϹΟΓΟΝΟΥ ⌒, and in exergue ΧΙΛΝ.

Æ. ↑↓ 25·50 mm. 87·0 grains (5·64 grammes). (b) Berlin Cabinet.

138 *β*. *Obv.*—Same as preceding.

Rev.—Apollo and Dionysus as before, but of very degraded style, heads facing inwards and no altar between the gods. Around ΕΠΙ ΑΡΧ·Χ ΡΥ ϹΟΓΟΝΟΥ· Ω, in exergue ΧΙΛΝ. Border of dots.

Æ. ↑↑ and ↑↓ (one specimen) 27·50–24·50 mm. 120·4–91·7 grains (7·80–5·94 grammes). Paris Cabinet, No. 5148, Hunterian Coll., No. 64, &c. Nine specimens in all. (Paris specimen from same *obv.* die as that of No. 5139 of type No. 137.)

139. *Obv.*—Same as preceding.

Rev.—Similar to that of type No. 132 *α*, but around ΕΠΑΡΧΑΥΡΧΡΥ ϹΟΓΟΝΟΥ·ΧΙ Ω, and Λ Ν in field l. and r. above the stars. Border of dots.

Æ. ↑↓ 27·25–25·50 mm. 135·0–115·0 grains (8·75–7·45 grammes). Brit. Mus. Cat. Ionia, Chios, No. 129, &c. Four specimens in all.

140. *Obv.*—Same as preceding.

Rev.—Similar to that of type No. 135 without the ears of corn, and field occupied by inscription

ΕΠ ΑΡ
ΑΥ ΧΡ
ΥϹΟ ΓΟΝ
ΟΥ ΧΙ
Λ Ν

Æ. ↑↑ 25·50 mm. 96·5 grains (6·25 grammes). (g) Brit. Mus. Cat. Ionia, Chios, No. 130.

(Another specimen from same *rev.* die in private hands at Chios, weight unknown.)

141 *α*. *Obv.*—Same as preceding, but Sphinx sometimes raises nearer forepaw. Above ACAP I A ⌒, in exergue ΔVΛ. Plain line or dotted border.

Rev.—Same as type No. 132 *β*. Around ЄΠAPX·AV·X PVCOΓONOV Ω with X Λ in field l. and I N r., or ЄΠ·AP·AV·XPVC OΓONOV·XI Ω with Λ in field l. and N r.

Æ. ↑↓ 24·25–22·0 mm. 101·5–75·9 grains (6·58–4·92 grammes). Brit. Mus. Cat. Ionia, Chios, No. 132. Paris Cabinet, No. 5147, &c. Six specimens in all.

141 *β*. *Obv.*—Same as preceding, but Sphinx raises nearer forepaw. Above ACC A PA ⌒, in exergue ΔVΛ. Border of dots.

Rev.—Similar to preceding, but hero's head is turned to r.; at his feet helmet. Around ЄΠAPAVXP VCOΓONOV Ω with X Λ in field l. and I N r. Border of dots.

Æ. ↑↓ 23·00 mm. 77·0 grains (4·99 grammes). Brit. Mus. Cat. Ionia, Chios, No. 131.

142. *Obv.*—Same as preceding, but Sphinx raises farther forepaw. Above ACAP I A ⌒, in exergue ΔVΛ.

Rev.—Kantharos. Around ЄΠAPAVXP V CO-ΓONOVXI Ω, in field l. Λ and r. N., or ЄΠ·XPVC OΓONOV Ω, in field l. X Λ and r. I N. Border of dots.

Æ. ↑↓ 22·00 mm. 75·9 grains (4·92 grammes). pierced, Brit. Mus. Cat. Ionia, Chios, No. 133.

↑↓ 22·50 mm. 62·6 grains (4·06 grammes). (m) My collection, found in Chios.

143 α. *Obv.*—Same as type No. 137. ΑΣΑΡΙ Α Τ Ρ ΙΑ· around Ω.

Rev.—Apollo and Dionysus facing with altar between them. In field r. star. Above Χ Ι Ω Ν. Border of dots.

Æ. ↑↓ 25·50–24·50 mm. 135·2–102·1 grains (8·76–6·62 grammes). Brit. Mus. Cat. Ionia, Chios, No. 134 (same *obv.* die as No. 129 of type No. 139), Munich, Vienna, and Berlin Cabinets (one pierced).

143 β. *Obv.*—Same as preceding.

Rev.—Similar to type No. 138 β, but Χ Ι Ω around ↷, and Ν in exergue. Border of dots.

Æ. ↑↑ 23·50 mm. 119·1 grains (7·72 grammes). (g) Vienna Cabinet.

↑↑ 25·50 mm. 101·2 grains (6·56 grammes). (b) My collection.

144. *Obv.*—Same as preceding.

Rev.—Same as type No. 135, but sometimes a star in field on either side below letters.

Æ. ↑↑ 26·50-24·50 mm. 142·8–100·3 grains (9·70–6·50 grammes). Hunterian Coll., No. 66 (same *obv.* die as No. 64 of type No. 138 β), Paris Cabinet, No. 5169 (same *obv.* die as No. 5139 of type No. 137 and No. 5148 of type No. 138 β) [Pl. II. 13 for *rev.*], &c., Six specimens in all.

145 α. *Obv.*—Same as type No. 141 α. Sphinx raises nearer forepaw. Above ΑΣΑΡ Ι Α ↷, in exergue ΔΥΩ.

Rev.—Same as type No. 141 α with helmet at hero's feet, but no magistrate's name and a star on either side in field.

Æ. ↑↑ 22·25 mm. 92·4 grains (5·99 grammes). (b) Berlin Cabinet.

145 β. *Obv.*—Same as preceding except that Sphinx sometimes raises farther forepaw.

Rev.—Same as type No. 141 β, but no magistrate's name and a star on either side in field below letters.

Æ. ↑↓ 23·25 mm. 98·5 grains (6·38 grammes). (g) My collection.

↑↑ 25·00 mm. 81·2 grains (5·26 grammes). (m) Athens Cabinet, found in Delos, 1906–8, *Journ. Internat. d'Arch. Num.*, 1911, p. 79.

↑↓ 23·50 mm. 70·7 grains (4·58 grammes). (b) pierced, Berlin Cabinet.

146. *Obv.*—Same as preceding.

Rev.—Same as type No. 142, but no magistrate's name and a star in field on either side of kantharos below letters.

Æ. ↑↓ and ↑↑ (two specimens) 25·25–22·25 mm. 98·9–64·2 grains (6·41–4·16 grammes). Brit. Mus. Cat. Ionia, Chios, No. 135, Paris Cabinet, Nos. 5132–3 (the former pierced), Athens Cabinet (found in Delos), &c. Seven specimens in all.

147. *Obv.*—Same as preceding, but Sphinx raises farther forepaw with X I ∩ ⌒ above, and N in exergue.

Rev.—Amphora on a short line between ears of corn. To l. ACA upwards, to r. PIO (*sic*) downwards; a star in field on either side above letters. Border of dots.

Æ. ↑↑ 16·50 mm. 36·4 grains (2·36 grammes). (g) Paris Cabinet, No. 5106. [Pl. II. 14.]

Nos. 125–9. The fabric of all these types which preserve the old module more or less is peculiar, the flans being unusually thin. They must have followed very closely after types Nos. 123–4 of the last sub-period, as the style of the two groups is very similar allowing for the rapid degradation that characterizes the present one. The arrangement of the lettering on the three-assaria, No. 125, is particularly clumsy.

The obverse inscription of the assarion No. 127, with N in the exergue, is typical of this sub-period (see types Nos. 136, 143 β, and 147), and would be sufficient to justify the attribution here if the weight and general appearance of the coin did not also recommend it.

Nos. 130–47 comprise the coins of small module which I have not attempted to arrange chronologically. They will be observed to have the Sphinx on their obverses turned to the right in every instance, unlike the issues of the heavier coinage, on which the position was being changed constantly.

The three-assaria and two-assaria of type No. 130 seem to have been modelled on the earlier coins described under type No. 117.

The two rare sub-types without a magistrate's name described under No. 133 may be taken as having belonged to the same issue on account of the similarity in the arrangement of the reverse inscription on both denominations. The unusual size of the three-assaria is no doubt to be accounted for by its having been struck on an old flan, possibly from the group represented by types Nos. 125–9.

It is interesting to compare the size of the one-and-a-half-assarion, No. 136, with that of the early issues of this denomination [Pl. I. 5]. It may also be noted that the wreaths round the reverse types tend to disappear during this sub-period, and thus unconsciously repeat the simpler designs of the first imperial issues. Some of the dotted borders too are replaced by plain line circles.

I am not enumerating the "alliance coins" that belong to this period, because they are only an offshoot of the Chian series and have no bearing on its chrono-

logical arrangement. One of them, however, does seem to testify to the fact that the mint was still open in the middle of the third century of our era. This is the large piece in Berlin engraved with the bust and name of the Emperor M. Julius Philippus, who died in A.D. 249. The coin was published by Dr. Julius von Schlosser in *Num. Zeitschrift,* 1891, p. 13.

Note.—Since completing my Period IX (*Num. Chron.*, 1916, pp. 297 ff.) I have been kindly informed by Mr. E. T. Newell that tetradrachms of Alexandrine types with little Sphinxes forming part of the throne-legs on the reverse occur among the second-century issues of Alabanda, Magnesia, Cyme, and Temnus, as well as of Chios. This ornament cannot therefore be considered a distinguishing mark of the Chian Alexanders, as I had suggested on p. 325.

Mr. Newell also writes that the magistrate's name on his small bronze coin included under my type No. 68 "has every appearance of once having read ΕΚΤΟΡ - - -". I am accordingly cancelling the uncertain reading [Ε]Κ - ΟΔ - - in my list of magistrates, p. 355, and welcome the new one as being in accordance with the hope that I had ventured to express on p. 335.

For both these pieces of information I am very grateful.

I have now to acknowledge my long-standing indebtedness to those who have assisted me with casts or correspondence, or in other ways; to M. E. Babelon and his staff at the Bibliothèque Nationale, Paris; to M. J. N. Svoronos and his assistant at Athens; to Dr. G. Macdonald, Dr. F. Imhoof-Blumer, Sir Hermann Weber, M. B. Yakountchikoff, Mr. R. Jameson, Mr.

E. T. Newell, the late Rev. Canon W. Greenwell, the Rev. E. Rogers, Mrs. Baldwin-Brett, Mr. S. W. Grose, Mr. E. Shepherd, and Mr. F. W. Peterson; to the Keepers of the Coin Cabinets at Berlin, Vienna, Munich, the Fitzwilliam Museum, Cambridge, Aberdeen University, the Metropolitan Museum of New York, the Museum of Fine Arts, Boston, U.S.A., and the Public Library at Chios. To Mr. G. F. Hill, Keeper of the National Collection, I cannot sufficiently express my gratitude for his never-failing courtesy and readiness to help under all circumstances and on every subject. In reading the proofs of the above he has saved me from numberless pitfalls. To him and to his assistants at the British Museum I owe my warmest thanks.

In conclusion I wish to record my regret that, in consequence of the war, I have been unable to pursue these researches as far as I might have done otherwise. At the same time I cannot forget that the arrangement of my material, such as it is, has procured me many an enviable respite from what Dr. Walter Leaf has somewhere called "the great preoccupation". For this I have to thank the study of Greek numismatics and, in particular, that of the coins left behind by those who once dwelt in the island home of my ancestors.

J. MAVROGORDATO.

ERRATA

Note 16, p. 8, *Num. Chron.*, 1915, *for* Mémoire sur l'Ile de Chio, *read* Questions Historiques.

Pp. 38 and 40, *Num. Chron.*, 1915, *for* Municipal Museum, New York, *read* Metropolitan Museum, &c.

P. 397, *Num. Chron.*, 1915, for τεσσερακοστὴ *read* τεσσαρακοστὴ.

P. 355, *Num. Chron.*, 1916, *for* 133 (?)-84 B.C., *read* 133 (?)-88 B.C.

P. 253, note 124, *Num. Chron.*, 1917, *for* Κῶστος *read* Κῶτσος.

APPENDIX I

Summary of coin-weights recorded above under types Nos. 96–147.—Weights in grammes.

(The early assarion, No. 95, is omitted as representing a separate class, its average weight being 9·97 grammes.)

Denomination.	*Obv. symbol.*	*Rev. type.*	*Sub-period α.*				*Sub-period β.*			
			No. of pieces.	*Maximum weight.*	*Minimum weight.*	*Average.*	*No. of pieces.*	*Maximum weight.*	*Minimum weight.*	*Average.*
3 assaria	Prow	Amphora, or Statues of Apollo and Dionysus	8	23.51	15.60	18.66	27 (5 pd.)	23.61	11.70	16.40
Obol } 2 assaria }	Prow	Kantharos, or Statue of a Hero	9 (1 pd.)	14.40	9.80	11.68	17 (1 pd.)	16.47	7.19	10.31
			—	—	caret	—	—	—	caret	—
1½ assarion	Prow, Aplustre, Club, or Amphora	Crossed Thyrsi	6	11.50	7.41	9.98	8 (1 pd.)	10.27	4.45	7.41
1 assarion	Bunch of Grapes, or Prow	Amphora	—	—	caret	—	11	7.23	4.45	5.77
4 chalkoi	Prow	Bunch of Grapes	—	—	caret	—	—	—	caret	—
3 chalkoi	(?) }	Kantharos {	4	4.05	3.34	3.65	—	—	caret	—
½ assarion	Nothing, or Prow }		6	4.00	1.75	2.79	16	3.43	1.58	2.84
2 chalkoi	Nothing, or Prow	Amphora	2	2.00	1.88	1.94	8	3.34	2.05	2.64
No denom.	Kantharos, Prow, or Amphora	Seated figure of Homer	2	5.22	3.74	4.48	5	4.41	3.34	3.63

APPENDIX I

Summary of coin-weights recorded above under types Nos. 96–147.—Weights in grammes.

(The early assarion, No. 95, is omitted as representing a separate class, its average weight being 9·97 grammes.)

Denomination.	*Obv. symbol.*	*Rev. type.*	*Sub-period γ.*				*Sub-period δ.*			
			No. of pieces.	*Maximum weight.*	*Minimum weight.*	*Average.*	*No. of pieces.*	*Maximum weight.*	*Minimum weight.*	*Average.*
3 assaria	Prow	Amphora, or Statues of Apollo and Dionysus	28 (4 pd.)	19·57	12·11	16·036	75 (2 pd.)	10·50	5·39	7·704
Obol	Prow	Kantharos, or Statue of Hero	—	—	caret	—	—	—	caret	—
2 assaria			20 (3 pd.)	11·54	7·47	9·55	41 (3 pd.)	7·55	3·10	5·45
1½ assarion	Prow, Aplustre, Club, or Amphora	Crossed Thyrsi	15 (2 pd.)	10·19	6·55	7·80	16	5·00	2·84	3·78
1 assarion	Bunch of Grapes, or Prow	Amphora	17	6·95	4·15	5·15	2	3·22	2·36	2·79
4 chalkoi	Prow	Bunch of Grapes	12	3·10	2·12	2·71	—	—	caret	—
3 chalkoi	(?)	Kantharos	—	—	caret	—	—	—	caret	—
½ assarion	Nothing, or Prow		4	2·43	1·77	2·056	—	—	caret	—
2 chalkoi	Nothing, or Prow	Amphora	5	2·34	1·51	1·96	—	—	caret	—
No denom.	Kantharos, Prow, or Amphora	Seated figure of Homer	17	3·25	1·91	2·81	—	—	caret	—

APPENDIX II

List of magistrates' names belonging to Period XI, showing the varieties on which they occur, and the sub-periods to which they are assigned.

	Sub-period α.	*Sub-period β.*	*Sub-period γ.*	*Sub-period δ.*
Ἀντίοχος Ἀπολλωνίδου . .	96 α and 96 β	—	—	—
Αὐρ[ήλιος] Χρυσόγονος ὁ Ἐπαφρόδ(ε)ιτος (ἐπὶ ἄρχ.)	—	—	—	130–2 and 137–42
Εἰρηναῖος (ἐπὶ ἄρχ.) . . .	—	—	—	125–6
Κο[ΐντος] Οὐα[λέριος] Πρεῖμος (ἐπὶ ἄρχ.)	—	—	113–23	—
Στεφανήφορος	97 α and 97 β	—	—	—
Φαῦστος	95	—	—	—

List of all the Chian magistrates recorded above with their approximate dates.

[N.B.—The names marked with an asterisk do not occur under Chios in R. Münsterberg's *Die Beamtennamen auf den griechischen Münzen*, Wien, 1914, and those marked with a dagger are not to be found in Bechtel and Fick's *Die griechischen Personennamen*, Göttingen, 1894. R. of A. = reign of Augustus.]

	B. C.
*Ἀγα - -	412–334
*Ἀγγε - -	412–334
*Ἀγ[γ]ε - -	84–R. of A.
*Ἀγγέλης	301–190
Ἀγγελίσκος	190–133 (?)
Ἀθη - -	84–R. of A.
*Ἀθηνα[γόρας]	412–334
*Ἀθηναγ[όρας]	84–R. of A.
Ἀθήναιος	84–R. of A.
Ἀθηνικῶν	133 (?)–88
Αἰσχίνης	133 (?)–88
Ἀλκίμαχος	190–133 (?)
*Ἄμανος	84–R. of A.
*Ἀμφιλο - -	412–334
Ἀμφιμήδης	412–334
†Ἀνδρώναξ	133 (?)–88
*Ἀντικλ[ῆς]	133 (?)–88
Ἀντίοχος Ἀπολλωνίδου	R. of A.–A. D. 68
Ἀντιφῶν	190–133 (?)
Ἀπελλᾶς	133 (?)–88
Ἀπελλῆς	133 (?)–88
*Ἀπολλω[νίδης]	412–334
*Ἀπολλ[ωνίδης]	190–133 (?)
Ἀπολλων[ίδης]	133 (?)–88 84–R. of A.
Ἀργεῖος	190–133 (?)
Ἀργεῖος	133 (?)–88
†*Ἀργῆος	84–R. of A.
Ἀρίσταιχμος	84–R. of A.
*Ἀρίστης	412–334
Ἀριστοκλῆς	84–R. of A.
Ἀριστόμ[αχος]	190–133 (?)
*Ἀριστόμ[αχος?]	84–R. of A.
Ἀρτεμῆς	133 (?)–88
Ἀρτεμίδωρος	133 (?)–88 84–R. of A.
Ἀρτέμων	412–334
*Ἄσμενος	412–334
*Ἄσμενος	301–190

Ἄσμενος	84–R. of A.
*Ἀσπάσιος	190–133 (?)
Ἀσπάσιος	84–R. of A.
†Ἀσφάλης	84–R. of A.
Αὐρ[ήλιος] Χρυσόγονος ὁ Ἐπαφρόδ(ε)ιτος	A. D. 150 (?)–268
	B. C.
Βασιλείδης	412–334
Βάτις	301–190
†Γέρως	412–334
Γλαῦκος	84–R. of A.
Γνῶσις	190–133 (?)
Γοργίας	133 (?)–88 84–R. of A.
Δέκμος	84–R. of A.
Δερκύλος	133 (?)–88
Δημήτριος	190–133 (?)
*Δημοκλῆς	133 (?)–88
Δημοκράτης	412–334
*Δημοκρά[της]	133 (?)–88
Διογένης	84–R. of A.
Διόγνητος	190–133 (?)
Διόδωρος	84–R. of A.
*Διομήδης	133 (?)–88
*Διονυ - -	84–R. of A.
*[Δ]ιοσκου[ρίδης]	412–334
Δωρόθεος	190–133 (?)
	A. D.
Εἰρηναῖος	150 (?)–268
	B. C.
*Ἕκτορ - -	133 (?)–88
†*Εὔνομος	301–190
Εὐρύνομος	412–334
Ἐπαίνε[τος]	412–334
Ἕρμαρχος	412–334
*Ἑρμόστρατ[ος]	301–190
Ἑρμόφαντος	412–334
*Ἑρμόφαντος	133 (?)–88
*Ἑρμώναξ	301–190
*Ἑρμώνα[ξ]	190–133 (?)
Ἑστιαῖος	190–133 (?)
*Ἑστι[αῖος ?]	84–R. of A.
Εὔδημος	84–R. of A.
Εὐκλέων	190–133 (?)
Εὐκλῆς	190–133 (?)
Εὔξενος	133 (?)–88
Ζῆνις	133 (?)–88
Ζηνόδοτος	190–133 (?)
Ζηνόδωρος	133 (?)–88
Ζήνων	412–334
Ζήνων	190–133 (?)
Ἡγέμων	190–133 (?)
*Ἤγη - -	84–R. of A.
*Ἡγήμ[ων]	84–R. of A.
*Ἡγήσιπ[πος]	412–334
Ἤιθεος	301–190
Ἡλιόδωρος	133 (?)–88
†Ἡραγόρης	412–334
*Ἡραῖος	133 (?)–88
*Ἡράκλειτος	190–133 (?)
†Ἡριδανός	412–334
*Ἡριδανός	301–190
*Ἡρο[δ] - -	301–190
Ἡροκράτ[ης]	133 (?)–88
Ἡροκράτ[ης]	84–R. of A.
Ἡρόστρα[τος]	190–133 (?)
*Θεόδοτος	301–190
Θεόδωρος	412–334
*Θεόδω[ρος]	190–133 (?)
*Θεόδωρος	84–R. of A.
Θεόπομπος (and Θεύπο(μ)πος)	301–190
Θεῶττις (and Θεῦττ[ις])	412–334
Θερσῆς	190–133 (?)
Θεῦμνις	133 (?)–88
Θήρων	412–334
*Θήρων	301–190
Ἱερώνυμος Ἀπολλωνίου	84–R. of A.
*Ἱκέσιος	412–334
Ἱκέσιος	190–133 (?)
Ἱππίας	412–334
†Ἱππίης	412–334
Ἱστι[αῖος]	412–334
*Ἱστιαῖος	301–190
†Ἰσχίμα[χος]	412–334
Καλλικλῆς	412–334
Καυκασίων	190–133 (?)
Κηφισίδη[ς]	190–133 (?)
Κηφισόκριτος	412–334
†Κλείδης	133 (?)–88
Κλείτων	301–190
Κο[ΐντος] Οὐα[λέριος] Πρεῖμος	A. D. 117–150 (?)
	B. C.
Κόρωνος	133 (?)–88
Κράτων	190–133 (?)
*Κρίτων	301–190
†Κύλλανος	190–133 (?)
Λάμπρος	190–133 (?)
Λανδαρι - -	412–334
†Λάσων	190–133 (?)
Λεωμέδων	190–133 (?)
Λεωνίδης	84–R. of A.
†Λέωχος	412–334
Λυκόρ[μας or -τας]	412–334
*Λυσικρ[άτης]	190–133 (?)
*Μενεκλῆς	133 (?)–88
Μενεκράτης	190–133 (?)
Μενεκράτης	84–R. of A.

Μενεσθεύ[ς]	190–133 (?)
*Μένιππος	84–R. of A.
Μηνογένη[ς]	133 (?)–88
*Μηνόδωρος	84–R. of A.
Μηνόφιλος	133 (?)–88
†Μητᾶς	133 (?)–88
Μητρόδωρος	133 (?)–88 84–R. of A.
*Μίκκαλος	133 (?)–88
Μιλτιάδης	133 (?)–88
Μινύ[κιος]	84–R. of A.
*Μοσχίων	84–R. of A.
Ξάνθιππ[ος]	133 (?)–88
Ξένων	190–133 (?)
Ξοῦθος	190–133 (?)
Οἰνοπί[δ]ης	190–133 (?)
*'Οχ - -	412–334
*[Π]αταικίων	84–R. of A.
Παυσανίας	84–R. of A.
Πεισι - -	412–334
†Πολίανθος	190–133 (?)
Πολυμη - -	412–334
Ποσείδιππος	412–334
*Ποσειδ - -	301–190
Πτολεμαῖος	84–R. of A.
*Πύθιος	84–R. of A.
Ῥαβίριος	84–R. of A.
Σίλλις	84–R. of A.
Σκύμνος	412–334
*Σκύμ[νος]	190–133 (?)
*Σκύμνος	84–R. of A.
*Στάφυλ[ος]	190–133 (?)
Στάφυλος	133 (?)–88
Στεφανήφορος	R. of A.–A. D. 68
Στρατόνι[κος]	133 (?)–88
*Σωσίβιος	84–R. of A.
Σωσίνικος	84–R. of A.
Σώστρα[τος]	412–334
Σώστρατ[ος]	190–133 (?)
*Σώστρατος	84–R. of A.
Τηλέμαχ[ος]	190–133 (?)
Τι. Κλαύ. Γοργίας. Δωροθέου	84–R. of A.
Τίμανδρος	190–133 (?)
†*Τιμοδάμας	190–133 (?)
Τιμοκλῆ[ς]	190–133 (?)
Τίμων	190–133 (?)
Τρύφων	133 (?)–88
*Φαναγό[ρης or -ρας]	133 (?)–88
*[Φ]αινο - -	190–133 (?)
†*Φαινομ[ενός]	84–R. of A.
*Φάνης	84–R. of A.
*Φανόδικος	301–190
Φανοκλῆς	412–334
Φαῦστος	84–R. of A. R. of A.–A. D. 68
†Φησῖνος	412–334
Φησῖνο[ς]	84–R. of A.
Φίλιππος	190–133 (?)
*Φιλίστης	301–190
Φίλτης	412–334
Φίλτης	301–190
*Φίλων	301–190
†Φιττακ[ός]	412–334
Φοῖνιξ	412–334
*Φοῖνιξ	190–133 (?)
Χάρης	190–133 (?)
†Χίρων	301–190
*- - γικλο - -	301–190
*- - μοκλῆς	301–190
*- - όντιος	84–R. of A.
'Αναξαγο - -	412–334
*Γυθ[ί]ων	84–R. of A.
ΑΙΔΗΜΟ - -	84–R. of A.
ΛΥΚΙΔΕΟΣ	412–334
ΤΙΜΟΛ - -	412–334
ΦΑΝΑ - -	301–190

SUPPLEMENT.

THROUGH the courtesy of Mr. J. G. Milne I am enabled to publish the four following bronze coins of Chios in his collection, of which two are quite new to me and the other two serve to clear up various points that had hitherto been obscure.

To take the coins in their order of succession according to my attributions they are as follows:

1. *Obv.*—Sphinx with curled wing seated r. [on plain exergual line].

   Rev.—Amphora between ΙΗΝΩ[Ν] r., and ΧΙΟΣ l.

   Æ. ↑↑ 11·00 mm. 11·4 grains (0·74 gramme).

This coin belongs to my type No. 65, first half of Per. IX, 190–133 (?) B.C. (*Num. Chron.*, 1916, p. 314, and Pl. XI. 11 and 12). Its style, lettering, and general appearance all agree with those of the other coins enumerated there, but the magistrate's name does not occur either among these small pieces or among the larger ones of type No. 62, which seem to be their contemporaries.

The name ΙΗΝΩΝ does occur, however, among the drachms of type No. 63 *a*, which I have also indicated as the probable contemporaries of No. 65, and the suggestion is now strengthened by the discovery of this coin. The form of Ι employed is also in favour of the attribution since the same form is found on the drachm in question, while the coins only a little later in date (type No. 66 for instance with ΖΗΝΙΣ and ΖΗΝΟΔΩΡΟΣ) all show the form Ζ.

2. *Obv.*—Sphinx, in low relief and of poor style, seated r.

   Rev.—Amphora with lip between ΓΛΑ - - r., and ΧΙΟΣ l.

   Æ. ↑↓ 9·00 mm. 7·0 grains (0·455 gramme).

This is a new type, and probably represents a new magistrate, if not a new name as well.

In seeking for its correct attribution the field of choice is not a very wide one as the coin clearly belongs to the first century B.C. This limit can be still further reduced to the period between 84 and 30 B.C., since the coin does not belong to any imperial issue, and, in conformity with my theory regarding obverses in low relief, must therefore be confined to the autonomous issues that followed the exile in Pontus. In order to define its position still more precisely I am inclined to associate it with type No. 71, Per. X, 84 B.C.—Reign of Augustus (*Num. Chron.*, 1917, pp. 218–19, and Pl. IX. 4), in the same sense in which type No. 65 is connected with No. 62, and No. 68 with No. 67. In other words, I take it to represent a fraction of type No. 71, most probably its quarter.

It seems to have been the custom throughout autonomous days to strike bronze coins of two sizes,[1] and so far type No. 71, as one of the more important groups of coins issued at the Chian mint, is the solitary exception to this rule. The anomaly is now removed, in my opinion, by the little coin under consideration.

The low relief of the obverse, the lettering showing clearly marked "apices", and the amphora with a lip are all features characteristic of type No. 71. It is quite the smallest and lightest Chian specimen that I have come across, not even excepting type No. 93. These facts are also in favour of its attribution as a fraction of type No. 71, since that type in itself is both smaller and lighter than any of the other main bronze issues alluded to above, Nos. 54–6, 62, and 67.

There is no need to connect the magistrate's name ΓΛΑ - - with the Γλαῦκος of type No. 76 *β*, as the latter's issue is quite distinctive in style, and considerably later.

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[1] See *Num. Chron.*, 1915, p. 403, and 1916, pp. 293–5, 342–3, and 352–3.

3. *Obv.*—Sphinx with sketchy curled wing seated l. on plain exergual line, and lifting farther forepaw over bunch of grapes.

Rev.—Amphora between ΓΥΘΙΩΝ r., and ΧΙ ΟΣ l., with caps of Dioscuri.

Æ. ↑↑ 12·75 mm. 37·0 grains (2·40 grammes).

This coin removes all doubt as to the correct reading of the name on the specimen of the same issue at Athens that I have rendered ΓΥΘ[Ι]ΩΝ (*Num. Chron.*, 1917, p. 218, type No. 71). Mr. Milne's specimen also determines the symbol which is indistinguishable on the one at Athens. As will be seen by referring to my type No. 71 the caps of the Dioscuri were used freely as a symbol on this group of coins.

4. *Obv.*—Sphinx with curled wing, in higher relief than preceding, seated l. on plain exergual line. Before it bunch of grapes.

Rev.—Amphora between [Σ]ΟΣΙΝΙΚΟΣ (*sic*) r., and ΧΙ ΟΣ l., with owl standing r., head facing.

Æ. ↑↑ 14·00 mm. 41·7 grains (2·70 grammes).

In spite of the imperfect form of the Ω on this coin, I think it beyond all question that the name is intended for ΣΩΣΙΝΙΚΟΣ, as on the third issue of my type No. 75 (*Num. Chron.*, 1917, p. 221). This is confirmed by the fact that the real *omicrons* are of smaller size. The new feature now established is that the symbol on this issue is an owl, and not a wreath. The other three specimens known to me are all more or less worn, and I have wrongly taken the symbol on them for a wreath on account of its resemblance to the peculiar form of wreath found on the contemporary drachms of type No. 69 with ΔΕΚΜΟΣ and ΜΕΝΕΚΡΑΤΗΣ.

A bronze coin at Athens with the name ΣΩΣΙΒΙΟ[Σ], my type No. 71, seemed to me to bear an owl as symbol, but I have marked it doubtful because, besides being indistinct,

it was the only instance then known to me of such a symbol in the whole Chian series. Now that the owl is certain on the coins under discussion there is no longer any reason to doubt its presence also on the practically contemporary issue with ΣΩΣΙΒΙΟ[Σ].

Mr. Milne is also the fortunate possessor of one of the rare *assaria* with ΦΑΥΣΤΟΣ of type No. 95 (p. 14), and of one of the still rarer *two-assaria* pieces with sphinx to right of type No. 114 *a* (p. 44).

The former weighs 129·6 grains (8.40 grammes), thus reducing the average weight recorded for coins of this type from 153·9 to 148·9 grains (9·97 to 9·65 grammes).

The latter exhibits the remarkable weight, for its class, of 203·5 grains (13·19 grammes), and is by far the heaviest *two-assaria* piece known (see table on pp. 71–2).

J. M.

II.

ON THE COINS OF SEVERUS AND GALLIENUS COMMEMORATING THE ROMAN LEGIONS.

[See Plate III.]

Every collector of Roman coins knows of three long series with the standards or badges of legions upon them, those issued by Marcus Antonius in about 33 B.C., by Septimius Severus in A.D. 193–194, and by Gallienus in three successive years of the early part of his reign, whose exact dates we have to determine. It is not every collector, however, who is lucky enough to possess any of certain other and much scarcer legionary coins which exist, such as the gold quinarius of Augustus in the Berlin Cabinet commemorating the XVI legion, the three denarii of the insurgent Clodius Macer, struck in Africa in A.D. 68, the piece "restored" by M. Aurelius and L. Verus to commemorate the VI legion,[1] the considerable gold coinage in honour of certain legions struck by Victorinus, or the coppers of Carausius, which note some six or eight western legions which he had won over to his usurpation, or hoped to win over in the future. There is one solitary legionary coin of Allectus known also.

I am not at present concerned with any of the earlier legionary coins cited above, but only with those of the

[1] This was of course the old VI Ferrata of M. Antonius, not the British legion VI Victrix.

later emperors, from Severus to Allectus. For British students of archaeology the proper historical deductions from them have never been drawn, except for the coinage of Carausius in Mr. Percy Webb's excellent monograph on that usurper in the *Numismatic Chronicle* of 1907. To a certain extent this fact is due to the unsatisfactory way in which many of them are catalogued in Cohen's great work. Neither that author nor his reviser in the second edition were interested in Roman regimental history; hence they inserted in the great bible of the collector of imperial coins many legionary pieces which are frankly impossible, because they commemorate corps which either never existed, or had long ceased to exist at the time when the third-century emperors issued their coins. Such miscataloguing was of course due in most cases to the poor condition of pieces, on which various savants read inscriptions wrongly, and then reported them as *inedita*. But in a few instances the coin engraver was at fault, for having inverted figures, *e.g.* for having put IX for XI, or IIXX for XXII, thereby bringing to life again a unit which had perished in war 150 or even 200 years before the coin which seems to commemorate it was struck. One of my objects in this paper is to clear out of Cohen's lists a number of legions which appear in them, either through a modern misreading, or through an ancient engraver's slip of the tool.

Much has been written about the history of the legions of the Roman Empire; and their monuments have been so carefully collated, and compared with the records of them in the historians, that it has been found possible to construct a regular regimental record of nearly every one of them, from the time when the

first units which got upon the permanent roll were embodied by Augustus or Marcus Antonius, down to the date when the not inconsiderable number of surviving corps is recorded for the last time, in that very useful document the *Notitia Imperii*, whose date lies close on the year A.D. 400.

It may be profitable to commence with a short note upon the vagaries of the Roman Army-List with regard to the numbering of the legions. Odd as it may seem, there never was a time when there did not exist more than one legion bearing the same number. There were always several legions with the numbers IV, VI, X, and only very short periods when there were not several I's, II's, and III's. This came from the fact that when Augustus reorganized the whole army after his victory at Actium, he took over several of Antony's legions, which bore identical numbers with others in his own series. For each *imperator* used to give a separate numerical sequence to his own corps, disregarding those of other generals. Augustus then had already the elements of confusion on his army-list, because he had his own III Augusta and Antony's III Gallica, his own VI Victrix and Antony's VI Ferrata, and so forth. But matters were made worse by his successors from Nero onwards: for when raising new legions they often gave them early numbers, apparently because these were considered more distinguished than high numbers in the twenties, which they ought to have borne:—thus, for example, Nero raised a I Adjutrix, Domitian a I Minervia, Trajan a II Trajana, and Severus a I, II, and III Parthica. On the other hand, when a legion was extinguished wholesale in battle, its regimental number was considered unlucky,

and was never used again. This happened for example with XVII, XVIII, and XIX, the three legions which were destroyed in the German disaster of Varus, and with IX Hispana, which was annihilated in Britain somewhere in the last years of Trajan or the first of Hadrian. There was only one occasion when an emperor raising a new corps counted how many legions he had already in arms, and, finding there were twenty-nine, called the fresh unit XXX Ulpia Victrix, though there was no higher number than XXII actually in existence at the time. This gap in numeration was perpetuated for the best part of three centuries!

It will be seen therefore how important it is to give not only the number of a legion, when we have to mention it, but also its full official title—to talk of VI Victrix, or I Minervia, rather than merely of the first or the sixth legion. For there may be three first legions or two sixth legions in existence at the moment, and the accurate reader will want to know which of them the historian is writing about.

So much by way of preface, to explain this duplication of numbers which makes the study of the legionary coins far more difficult than it otherwise would have been. Fortunately the coin-issuers nearly always give the honorary title as well as the mere number, or our task would have been much harder. For the future I shall never mention a legion by its number alone, but shall always add its official honorary designation.

The first set of legionary coins with which I have to deal is that issued by Severus. We can fix its date without difficulty, since the majority of the series was issued in the year of Severus's first consulship, and the

small minority in his second.[2] This at once gives us the date of A.D. 193–4. What was the political situation of those years? Severus had just seized the throne, after putting down Didius Julianus, the unfortunate millionaire who had so unwisely bought the imperial title from the Praetorian Guard, without pausing to make sure whether the provincial legions would accept of necessity the nomination of a nonentity by the urban soldiery.

But it was not Septimius Severus alone who had been saluted as emperor by the armies on the frontier. Pescennius Niger had also assumed the purple in Syria, and Clodius Albinus had been saluted as Caesar by the three legions of Britain. With Albinus the conqueror of Rome patched up for the time a sort of agreement, promising to recognize him as his junior colleague in the empire, and acknowledging his title of Caesar. I have seen a monument in the Museum at Mainz where the names of the two appear in friendly official collocation, the one as Augustus, the other as Caesar. But with Pescennius Niger, the much more important competitor in the East, who controlled nine legions in Asia and Egypt, while Albinus had only three in Britain, it was a case of war to the death. The moment that he was firm in his seat, and had negotiated his compromise with Albinus, Septimius marched eastward, and in 194–5 fought out his contest with Pescennius, slew him, and then turned back after an interval to deal with Albinus.

How does this historical sequence bear on the

[2] And the exception, struck in honour of XIV Gemina, in Severus's *Second* Consulship is a sort of "mule", as the obverse is dated COS II, but the reverse merely COS (i.e. A.D. 193).

legionary coinage of Severus? The moment that we look down the list of the pieces in the fourth volume of Cohen, and then write down opposite them the billets which we know them to have been occupying from the monuments in the last years of the second century, a fact of beautiful simplicity reveals itself. Severus struck coins in honour of fifteen legions:—

I Minervia, I Italica, I Adjutrix.	VIII Augusta.
II Adjutrix, II Italica.	XI Claudia.
III Italica.	XIII Gemina.
IV Flavia Felix.	XIV Gemina.
V Macedonica.	XXII Primigenia.
VII Claudia.	XXX Ulpia Victrix.

A glance at their location in the empire shows that we have here practically every regiment garrisoned on the Rhine and the Danube—in the two Germanias, Noricum, Rhaetia, Pannonia, Moesia, and Dacia. All these parts of the empire were in the hands of Severus, and we see that what he was doing, when he issued his legionary series, was to commemorate the legions that had adhered to him. There are only two missing, X Gemina, part of the garrison of Pannonia, and VII Gemina in Spain. I have no doubt that legionary coins of at least the first-named of these two corps will turn up some day to be catalogued, for the series is so almost-complete, that it is incredible that the emperor should have cared for the honour and profit of fifteen of his sixteen legions on the Rhine and Danube, and have forgotten the other one. The Spanish legion, remote from war, may have escaped commemoration.

On the other hand, there do not appear in the series any of the three legions in Britain, II Augusta, VI Victrix, XX Valeria Victrix, which belonged to Clodius Albinus, though that potentate was on friendly terms with Severus at the moment. There was no reason why he should commemorate them, when they had adhered to a rival. Still less do we find on the list any of the nine legions of the East, viz.

II Trajana,	X Fretensis,
III Cyrenaica,	XII Fulminata,
III Gallica,	XV Apollinaris,
IV Scythica,	XVI Flavia Firma,
VI Ferrata,	

which had adhered to Pescennius Niger in Asia Minor, Syria, and Egypt, and were actually in arms against the striker of this series of legionary coins.

It is almost impossible to avoid the deduction that these denarii — there are only two gold aurei for I Minervia and XIV Gemina and one brass sesterce for XIV Gemina in the whole lot — were not merely struck to serve as an honour to these legions, but actually as a donative, to reward their loyal adherence to their master in the war with Pescennius. For the rest, they are from the point of art rather an uninteresting collection, since they are all absolutely uniform in type, showing a legionary eagle between two cohort-standards, and differing among themselves only by bearing each a different number and official title of a different legion. The later series, which we shall next deal with, are much more interesting, since without exception they give not the mere name but also the regimental badge or emblem of all the corps which

are commemorated, and the figure of a god or goddess, a beast, a bird, or a mythological creature, is a much more artistic form of type than a mere legionary eagle between two standards.

The second of the post-Antonine emperors who issued a long series of legionary coins was Gallienus. They are of course not denarii, since that denomination had practically ceased to be struck by his time, and only survived as a rare coin infrequently issued. Like the large majority of the coins of this unlucky and somewhat maligned emperor, they are billon pieces, of the denomination that is generally but wrongly styled the Antoninianus.

But the legionary issues of Gallienus, as I said above, differ entirely in type from those of Severus, because in each case the reverse of the coin represents the established badge or crest of the corps, generally a beast, such as a lion, bull, wolf, or boar, but occasionally a bird, as with V Macedonica (eagle) and III Italica (stork), a mythological creature, such as a centaur (II Parthica), a capricorn (XXII Primigenia and XIV Gemina) or a Pegasus (II Adjutrix). Three legions only (I Minervia, XI Claudia, and XXX Ulpia Victrix) had instead of a badge of the normal sort the figure of a god or goddess, Minerva for the first-named, Neptune for the two others.

We must begin by extruding from the list of legionary coins given by Cohen the following fourteen, some of which are attributed to corps that never existed at all, others to corps that had perished long years back, while others again give the wrong regimental badge to a unit actually in being.

Legio I Augusta, No. 454, quoted in Cohen on the authority of Banduri, with badge of "Mars standing". The old first legion had perished in the civil wars of A.D. 68–70. Banduri's legend LEG I AVG VI. P. VI F. is probably a misreading for LEG I MIN VI. P. VI. F. with standing Minerva: the two helmeted figures are easily confused on a worn coin. It will not do for a coin of Legio II Augusta, because the badge of that corps, as shown on coins of Carausius, was a capricorn, not Mars.

Legio I Adjutrix with badge Pegasus, No. 451. Impossible, as the capricorn was the badge of I Adjutrix, and the Pegasus of II Adjutrix, as proved by numerous coins. Obviously either a misreading of Cohen from a rubbed coin, or an ancient engraver's slip of the tool.

Legio II Adjutrix with badge capricorn, No. 470. The opposite mistake to the last, the badge of the first Adjutrix joined to the name of the second. Explanations as in last.

Legio II Italica, No. 477, with badge stork. Obviously a misreading for III Italica, which was the stork-bearing Italic legion—the real badge of II Italica, as shown on many coins, was the Roman wolf and twins.

Legio III Italica, No. 495, quoted in Cohen on Gnecchi's authority with badge bull. Obviously a misreading for VIII AVG, which bore that badge, and easily misread on a badly struck or worn coin.

Legio VI Claudia, No. 508, quoted by Cohen as being in the Brera Cabinet, with badge bull. There never existed a VI Claudia, and this is obviously a misreading for VII Claudia, whose emblem was the bull.

Legio VI Macedonica, No. 509, quoted in Cohen from Banduri, with badge eagle crowned by Victory. There never existed a VI Macedonica, but the real V Macedonica did bear an eagle crowned by a Victory.

Legio VII Claudia, No. 519, quoted in Cohen from Banduri, with badge lion. Now VII Claudia, as dozens of specimens show, bore a bull as its badge. Either Banduri saw a coin so rubbed and poor that he mistook a bull for a lion, or else this was a badly preserved coin of IV Flavia, which did show a

galloping lion as badge. The former is the more probable explanation.

Legio IX (VIIII) Augusta, No. 527, quoted in Cohen from Banduri, with badge lion. There never was a IX Augusta, and IX Hispana had been destroyed in the reign of Trajan. This is a blundered reading of IV Flavia undoubtedly.

Legio IX (VIIII), No. 528, without any further title, and with badge eagle crowned by Victory. Undoubtedly a misreading of **V MAC**, as **VIIII**, for there had been no ninth legion for a hundred and fifty years.

Legio IIXX, Nos. 542–3–4. An ancient engraver's blunder, for the only eighteenth legion that ever existed had been destroyed with Varus in Germany more than two centuries back. As the capricorn badge shows, this coin has the miswriting of IIXX for XXII.

Legio XX, No. 548. Quoted by Cohen from Vaillant, with badge capricorn. It would be interesting to think that we had a coin of the British legion XX Valeria Victrix, as it would be the only British one in the whole of Gallienus's legionary set. But (*a*) the badge of XX was a boar, not a capricorn, as shown by plenty of tombstones, tiles, &c., of the legion at Chester, where it so long dwelt. (*b*) If this had been a real coin it would have had not **XX** only, but **XX VAL**, its title, added, as with others of the series. (*c*) Vaillant is not a serious authority for a unique coin. Undoubtedly he misread a rubbed XXII into XX, as the capricorn badge suggests.

Legio XXI Gemina, No. 549, quoted by Cohen from Banduri, with badge lion. Obviously a mistake for XIII Gemina, which did bear the lion badge. The XXI legion had been disbanded many years back.

Legio XXX Ulpia, No. 552, quoted by Cohen from Vaillant, with badge capricorn. But as many other coins show, XXX really bore a figure of Neptune. Undoubtedly a misreading by Vaillant from **XXII** into **XXX VLP**.

We have thus got rid of fourteen of Cohen's legionary types: no less than five of them come from Banduri, evidently a poor reader of inscriptions, whom Cohen should not have trusted, while two each are to be credited to the

misplaced ingenuity of Gnecchi and Vaillant. Only three of the impossibilities come from coins which Cohen had seen himself. The last figure in the plate illustrating this article shows a coin in my own collection which has a blundered inscription, but which is *not* in the *Monnaies de l'Empire Romain*; it has the badge wild boar, but the inscription **LEG IX CL**—there was no IX Claudia, and the only western legions with boar-crest were I Italica and XX Valeria. So here the engraver must have gone very wildly wrong.

Having got rid of the impossible legions, we find seventeen left and undoubtedly commemorated by Gallienus. Our first task is to compare them with the similar issues of Severus, and to our surprise we find that they are almost identical with the list of the earlier emperors. All of the fifteen Rhine and Danube corps which Severus honoured are represented, and with them two others: X Gemina, which we mentioned as unaccountably missing in the set of 193–4, and II Parthica. The appearance of the latter shows that Gallienus was not slavishly copying his predecessor; it was a new legion raised by Severus in the middle of his reign, and garrisoned in the new camp outside Rome on the Alban Hills, where Severus placed it to act as a permanent check on the Praetorian Guard, hitherto the only military force in or near Rome.

The question then that we have to ask ourselves is, Why did Gallienus commemorate the Rhine and Danube legions alone, and the one legion in Italy, leaving out all those of Britain, Spain, and the East, and at what period of his reign did he order the series to be issued? They belong obviously to three successive years, as a few of them (three) are dated **V P. V F.**

i. e. faithful and pious for the fifth time, the whole seventeen are found with **VI P. VI F.**, loyal for the sixth time, while twelve show **VII P. VII F.** There are none with the dates four or eight. I think we may safely take these figures to represent the regnal years of Gallienus, dating on from his first salutation as Augustus and colleague of his father Valerian in A.D. 253, and believe that they represent the years 257, 258, and 259. My reason for making a statement which may at first sight appear somewhat hazardous is this. In 258 Postumus, the well-known Gallic usurper, went into rebellion against Gallienus, and in 259 he achieved complete success, after slaying Saloninus, the emperor's young son, and his guardian Sylvanus. He became master of all Gaul, Britain, and Spain, and held them down to his death in 267, which just preceded that of the master against whom he had rebelled.

Now if anything is obvious, it is that Gallienus would at no date after 259 have celebrated the piety and loyalty of the Rhine legions, who had in that year assisted the rebel Postumus in slaying his emperor's eldest son, and overthrowing his authority in Gaul. But as three of the Gallic legions bear the latest date (**VII P. VII F.**) that is found on any of the series, no more legionary issues can ever have been struck after 259. The emperor or his mint-master at Rome may probably have been disgusted with the type, on reflecting that they had been for several years commemorating the loyalty of legions which had proved most disloyal, and so discontinued the series.

We may take it as proved, then, that all our coins belong to the three years 257–8–9. Why do they commemorate only the Rhine and Danube legions,

and not those of the East, of which there were at this time eleven? viz.

IV Scythica and XVI Flavia Firma in Syria,
III Gallica in Phoenicia,
VI Ferrata and X Fretensis in Judaea,
II Trajana in Egypt,
XII Fulminata and XV Apollinaris in Cappadocia,
I and III Parthica in Mesopotamia,
III Cyrenaica in Arabia.

All these provinces and their armies were at the time loyal and not in rebellion, so there was no reason for not honouring their garrisons.

The answer is simple and clear. Valerian, the father of Gallienus, when he started on his lengthy expedition to the East in 255, which was to end in his Mesopotamian disaster, is specially recorded by the authorities to have handed over the charge of the West and the German war to his son. He never returned to relieve Gallienus of his charge, but was permanently in the East for the next three years, conducting hostilities first against the Scythians who had invaded Thrace and Bithynia, and then against the Persian king Sapor, who had overrun northern Syria and captured Antioch. After a long series of successes, and the recovery of Antioch, Valerian pressed the Persians back into Mesopotamia, but was there defeated and forced to capitulate early in 259. How abominably he was treated by his captor, and how miserably he died, is common knowledge.

Evidently then from 255 to 259 Valerian was in personal charge of the East, but had handed over the West to his son. The legionary coinage was Gallienus's own affair, and did not concern Valerian.

And just as we get a special eastern currency for these years, with types like **RESTITVTOR ORIENTIS** and **VICTORIA PARTHICA** with Valerian's head, no similar types of Gallienus existing, so we get types of the western sort in quantities, of which no similar issue of Valerian is forthcoming. The explanation is quite simple. If the legionary coins had belonged to any later period of the life of Gallienus than 259, we should certainly have found some Oriental corps commemorated, since, in despite of numerous rebellions, Gallienus was intermittently in possession of Syria and Egypt. But the set had been brought to an end in 259, when the successful rebellion of Postumus tore Gaul away from Rome, not to be reunited to her, but to subsist as a separate "Imperium Galliarum" till Aurelian conquered Tetricus in A.D. 273.

But there remains one puzzle connected with the legionary coinage of Gallienus which I must confess myself unable to solve with any approach to certainty. Why does it not include any memorial of the three British legions, II Augusta, VI Victrix, and XX Valeria Victrix, or of the one Spanish legion VII Gemina? They were in the western half of the empire, and one would have supposed that Gallienus would have wished to conciliate them as much as the Rhine and Danube legions, whose names and badges and fidelity he so carefully commemorated.

The only plausible suggestion that I can make is that in 257–9 the Rhine and Danube legions were, as we know, actually engaged in considerable campaigns against invading barbarians, the Franks and Alemanni on the one side, the Goths and Scythians on the other, while Spain was quite undisturbed, and

Britain also so far as we know. At any rate there is no mention of Caledonian wars at this period, and there are monuments on the Northumbrian wall which seem to point to quiet times, *e.g.* inscriptions to the Gallic usurpers which would not have been put up in times of trouble. Perhaps therefore the legionary coins were real war-donatives, and only struck for, and given to, corps which had actually taken the field. But what of II Parthica, the legion normally garrisoned near Rome? Was it brought up to the Rhine for an emergency, and so entitled to commemoration? This would seem the easiest hypothesis to adopt.

Another but a less plausible hypothesis might be that Valerian, on his departure for the East, while giving Gallienus control of Gaul and Illyricum and Moesia, where wars were actually in progress, did not make over to him Britain and Spain, which were at peace; and may have directed their governors to continue reporting directly to himself instead of to his son. I must confess that this does not strike me as a probable explanation, since both Spain and Britain were excessively remote from Valerian's actual sphere of residence in Asia during these years.

It may perhaps be worth adding that Cohen's estimate of prices in the *Monnaies de l'Empire Romain* has no real relation to the rarity of the individual coins. Far the rarest legion is XIV Gemina, of which I have only seen one specimen, that in the British Museum, which he values at only three francs! Other scarce legions are II Italica, V Macedonica, and VIII Augusta. On the other hand, the commonest would seem to be I and II Adjutrix and XXII Primigenia.

At some not too remote date I hope to make a few remarks on the legionary coins of Victorinus and Carausius, though in the latter case Mr. Percy Webb's papers of 1907 make my comments rather unnecessary. Still there may be a remark or two more to be made on the money of the great British usurper. The Victorinus series, I may add, is far the most difficult to explain of all the legionary issues of the empire.

Note.

Since reading the above paper to the Society in January, I have had my attention called by the Keeper of the B. M. Coins to two articles in the *Numismatische Zeitschrift*, of whose existence I was not aware.

One by Kubitschek (1914, pp. 191 *et seq.*) is an argument that the legionary coins of Severus were probably struck when he was on his march from Carnuntum to Rome by his treasurer Rossius Vitulus, whose monument has been discovered at Bulla Regia in Africa. But it appears to me that the fabric and great number of the coins is against their having been issued at a temporary provincial mint. Their style is normal and very good; they are extremely common; and it seems most unlikely that Severus could, before he got to Rome, have struck money in quantities to satisfy not only the Pannonian legions, which actually formed his army, but the distant Gallic legions. On Kubitschek's theory, we should get a provincial-looking set, for a comparatively small number of legions. Kubitschek notes the absence of X Gemina from the list, and cannot explain it.

The other article by J. von Kolb (1873, pp. 53 *et seq.*) is an excellent catalogue of the Gallienus series, as it was known before the second edition of Cohen appeared. The author is set more on a catalogue than on historical explanation, and does not speculate on the date of the pieces. He is quite correct in extruding several of the impossible legions of Cohen's list of 1873, coming to much the same deductions as myself. This was a good piece of archaeological work for the date at which it was issued—over forty years ago.

C. OMAN.

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6. Noricum. II Italica [wolf and twins].
7, 8, 9. Upper Pannonia. I Adjutrix [capricorn], X Gemina [bull], XIV Gemina [capricorn].
10. Lower Pannonia. II Adjutrix [Pegasus].
11. Dacia. XIII Gemina [lion crowned by Victory].
12, 13. Upper Moesia. IV Flavia Felix [lion], VII Claudia [bull].
14, 15, 16. Lower Moesia. I Italica [boar], V Macedonica [eagle crowned by Victory], XI Claudia [figure of Neptune].
C. Legion in Italy.
17. II Parthica [centaur].
Placed last [18, 19] are two blundered coins "IIXX Primigenia" and "IX Claudia".

NOTE.—Of the above, all are from British Museum specimens, except 3, 6, 12, 15, 19, which are from my own collection.

C. O.

III.

TINC[OMMIUS].

[SEE PLATE IV.]

AT a General Meeting of the Cambridge Philological Society held at the residence of DR. GILES, Master of Emmanuel College, on Thursday, Nov. 22, 1917, SIR JOHN SANDYS, Litt.D., F.B.A., read a paper "On Possible Restorations in two Latin Inscriptions", (1) *Hadriani Adlocutio ad exercitum Africanum*, in Dessau's *Inscr. Lat.* i, No. 2487, p. 498; and (2) on part of § 32 of the *Monumentum Ancyranum*—especially on the following words:

AD ME SVPPLICES CONFVG(ERVNT) REGES PARTHORVM ETC.; BRITANNORVM DVMNOBELLAV(NVS) ET TIM . . . . . .

A brief summary of the whole paper will probably appear, at some future date, in the *Proceedings of the Cambridge Philological Society*. Meanwhile the longest and most appropriate portion, that on the above extract from the *Monumentum Ancyranum*, is printed in *extenso* in the *Numismatic Chronicle*. It is specially fitting that it should appear for the first time in that periodical. The main object of Sir John Sandys is to vindicate the views of the late Sir John Evans as to the proper restoration of the incompletely recorded name of a British king who, together with Dumnobellaunus, sought the protection of Augustus, as stated in § 32 of the *Monumentum Ancyranum*. It will be shown that those views, as set forth on pp. 158–70 of the work entitled *The Coins of the Ancient Britons*, arranged and described by John Evans, Honorary Secretary of the Numismatic Society of London (J. Russell Smith, 1864), were only imperfectly apprehended by two of the ablest German exponents of Latin Epigraphy, Theodor Mommsen (in 1883) and Emil Hübner (1897); also, that Mommsen and Hübner were necessarily precluded from taking into consideration the later and distinctly definite evidence subsequently brought forward in the *Supplement* to *The*

Coins of the Ancient Britons, pp. 499–507, produced by the same eminent and many-sided Antiquary in 1890, when he had attained the distinguished position of President of the Society of Antiquaries and of the Numismatic Society of London; lastly, that German scholars writing in or after 1890 had, for a variety of reasons, failed to notice the new evidence, and had thus, accidentally (no doubt) and unwittingly, done an injustice to the well-grounded opinion of a great British Antiquary as to the Roman name of a British king, whose father was famous in regions corresponding approximately to south-eastern England and to north-western France.

Towards the end of what has been called "the Queen of Latin Inscriptions", we find the Emperor Augustus setting forth the names of various foreign kings who had sought his protection, kings of Parthians and Medes, and of Britons and Germans.

In 34 B.C.,[1] and again, late in 27 B.C.,[2] Octavianus (the future Emperor Augustus) made preparations for the invasion of Britain, but at neither date did he go any farther than Gaul. The prospect, however, of a Roman conquest of Britain excited the interest of the Augustan poets. This interest was shown in 30 B.C. in some well-known lines of Virgil's *Georgics* (i. 30, iii. 25), and a little earlier in Horace's *Epodes* (vii. 7). In the *Odes* the preparations for the second expedition prompt the poet's prayer to the goddess Fortune: *serves iturum Caesarem in ultimos | orbis Britannos* (i. 35). We even find a prophecy that Augustus would be deemed a *praesens divus*, when Britons, as well as Persians (like Tiridates and Phraates in the present passage), had been added to the Roman Empire (iii. 5; cp. i. 21. 15; iii. 4. 33; iv. 14. 48).

After this time Augustus abandoned the proposed

[1] Dio, xlix. 38. [2] Dio, liii. 23.

invasion, but, writing shortly after the emperor's death, Strabo records the fact that certain British dynasts had sent envoys to Augustus, and had sought his friendship (iv. 5. 3, p. 200). He gives no names, but, in the present passage, Augustus himself tells us that, of the two British kings who became his "suppliants", one was named Dumnobellaunus, called in the Greek version of the inscription Domnoellaunos, the Dubnovellaunos of certain coins found in southern England [**Pl. IV. 15** and **16**]. Here the British V is represented in Latin by B, which has no equivalent in the Greek form of his name. (The beginning of the name reminds us of the Dumno-rix of Caesar, the Dubno-reix of the coins, while the end recalls the end of Cassi-vellaunus.) In 1864 Sir John Evans, in his *Coins of the Ancient Britons*, showed that his gold coins were of two types, the first found exclusively in Kent, and the second principally in Essex. He may have been expelled from Kent by Eppillus, a son of Commius (of whom more anon), and from Essex by Cunobelinus (who we know as Cymbeline); and it is this second expulsion that may have led to his seeking redress from Augustus (Evans, i, pp. 200–2).

While one of the two British kings who appealed to Augustus was apparently expelled from Kent by one of the sons of Commius, the other British king, whose name is only partially preserved in this passage, can be proved by the evidence of his coins to be another son of Commius. Who then was Commius?

Of a person who bore that name we learn a good deal in the later books of Caesar's *Gallic War*. Caesar made Commius king of the conquered Atrebātes, a Gallic tribe, whose name is preserved not only in the

old province of Artois, but also in its capital Arras. In 55 B.C., when Caesar was known to be planning an invasion of Britain, he received envoys from several states in that island, offering to accept the rule of Rome. Caesar encouraged them in this offer, and, when the envoys returned to Britain, he sent with them Commius, "whose influence was deemed of great account in those parts, *in his regionibus*," *i. e.* in SE. Britain (*B. G.* iv. 21). The Britons seized Commius and threw him into chains, but, on their defeat, they released him, and sent him to Caesar with their envoys to sue for peace (iv. 27), and in 54 B.C., on Caesar's second invasion, the Britons, under Cassivellaunus, on their second defeat, once more sent envoys to Caesar with the help of Commius (v. 22). Two years later (52 B.C.) Commius served under Caesar against the Menapii, among the northern Belgae (vi. 6), but in the following year (51 B.C.), his Gallic patriotism rising superior to his loyalty to Caesar, he was one of the three leaders of the Gallic confederacy which in vain essayed to relieve Vercingetorix at Alesia (vii. 75, 76, 79), between the upper courses of the Loire and the Seine.

Subsequently, he placed himself at the head of the Belgae, leading them bravely in three battles, but without success (Dio, xl. 42. 1–3). In the winter of 51 B.C. his assassination was in vain attempted by Caesar's representative Labienus (Hirtius, *B. G.* viii. 23. 3–7). Commius continued to attack the Romans, first as one of the leaders of the Bellovaci, and next as commander of his own troop of horse (*ib.* 6, 7, 10). As the sole surviving champion of the Gauls, he had been treacherously attacked by the Romans, and had then resolved "never to come within sight of any Roman"

(Hirtius, viii. 23 *ult.*), and it was on this condition that he ultimately submitted himself to Caesar's successor in Gaul, Marcus Antonius (viii. 48).

It is practically certain that in 51 B.C. Commius left Gaul for Britain; he had already fled towards that country when pursued by Caesar, and had only escaped capture, when the wind was favourable for the crossing, by hoisting up the sails of his vessel, which was still stranded on the shore, and thus leading his pursuers to believe that he was already on the sea. The story is preserved among the *Strategemata* of Frontinus (ii. 13. 11), who was the Roman governor of Britain 126 years later.

We have already seen that he had influence in that island just before and during Caesar's invasions; and we know that some of his Gallic fellow-tribesmen, the Atrebātes, were actually settled there (Ptol. ii. 3. 12), especially around Calleva, which became their capital, *Caleba Arbatium* (*sic* in Geogr. Rav.), afterwards known as Silchester.

In 1864 John Evans, in his *Coins of the Ancient Britons*, supplied sufficient numismatic evidence, not only of Commius's having taken up his abode in SE. Britain about 50 B.C., but also of his having been at the head of a group (or confederation) of tribes in that region. Only one type of coin could then be doubtfully ascribed to Commius, of which it could only be said that it bore a name ending in -MMIOS [Pl. IV. 1].

But it was shown that there were many other coins, struck by three different princes, nearly, if not quite, contemporary, though each apparently had a distinct territory of his own. All of them added to their

names upon their coins the title C·F or COM·F or COMM·F. It was once supposed that COM·F stood for the "Com(munity), of the F(irbolgs)", or Belgae, but the prefix Fir is the same as the Latin *vir*, and to say that F stands for the Firbolgs, or "the men of the Belgae", is as absurd as saying that M can stand for the "Men of Ireland".

The purely Roman lettering, and the analogy of the contemporary coins of Augustus, showed that these legends, C or COM or COMM, followed by F, all stood for *Commi filius*, son of Commius. All the coins were found in the region corresponding to our SE. counties, the very district in which Commius had influence in the age of Caesar. The coins of one of the three sons of Commius, Eppillus, were found in Kent [Pl. IV. 13]; those of another, Virica or Verica, mainly in Surrey [Pl. IV. 12]; while Sussex (and to some extent Hampshire) was the region where the coins bore a name beginning with either TIN or TINC or TINCOM.

Of twelve coins figured and described by Evans in 1864, six were inscribed with TIN on one side, and five of these had COM F (or COM) on the other; four others had TINC, in one case with COMMI F on the same side [Pl. IV. 2], in the other three with C or C·F [Pl. IV. 3] or C/F on the other side; while two had TINCOM (or - - NCOM), and, immediately below it, what was then described as "a zigzag ornament" [Pl. IV. 7 and 8]. This third type was the only one then known in which the name was extended to six letters, instead of the three letters of TIN or the four of TINC.

This extended form TINCOM suggested to Evans

that the full name was Tincommius. A year before the publication of Mommsen's first edition of the *Monumentum Ancyranum*, he knew the extract on the British kings from early copies of the *Monumentum* printed in Petrie's *Monumenta Historica Britannica* (1848); he also knew the Greek version first published by W. J. Hamilton in his *Researches in Asia Minor* in 1842, and the article founded thereon in the *Archäologische Zeitung* of 1843. Accordingly, he suggested that it was possibly the name of Tincommius that was preserved in the form of TIM . . . "in the inscription at Ancyra commemorating the deeds of Augustus".[3]

It is now known that the evidence for the letters **ET TIM** in § 32 of that inscription was preserved solely by the English antiquary Edmund Chishull, who was chaplain at Smyrna from 1698 to 1702, and, in 1701, received from the French traveller, Tournefort, the first of his two transcripts of the Latin inscription. This was made at a time when the top of Column VI was not yet seriously mutilated; Chishull finally published it in his *Antiquitates Asiaticae* in 1728. That which had been copied by a French traveller and published by an English antiquary in 1728, was independently confirmed by the Greek version, first deciphered by an English traveller, W. J. Hamilton, who, in 1842, printed at this very point (without further comment or explanation) the letters **ΚΑΙΤ**, i. e. *καὶ Τ*, which was all that survived of the Greek version of ET TIM. Hamilton's reading was ultimately confirmed by Humann's facsimile of 1882, which has **ΚΑΙ** followed by the top stroke of **Τ**. Thus, the top of Tau is all that now remains of "Tim".

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[3] Pp. 159, 199.

The German facsimile of the whole of the surviving portions of the Latin and Greek text was published in 1883 in the eleven plates which accompanied Mommsen's final separate edition of, and commentary on, the *Res gestae divi Augusti.* Published at the exceptionally low price of twelve marks, this has now become so scarce that an Oxford bookseller recently charged thirty-five shillings as the cash price of a second-hand copy.

Mommsen, on p. 140 of his commentary, in noticing the English antiquary's suggestion as to the probable name of the second British "king", admitted that the M of TIM might possibly have resulted from a misreading of the first two strokes of a mutilated N. He added, however, that TINCOM on the coins was not necessarily an abbreviation for Tincommius; for it might have stood for *Tin* . . . *Com* . . . . (omitting the word *filius*). None of the coins gave the name in full; he therefore preferred making no conjectures. Mommsen's supposition that TINCOM stands for TIN·COM·F implies that the full name was TINVS·COMMI·F, but other coins certainly have TINC, followed or accompanied by COMMI F (or by C·F) [Pl. IV. 2 and 3]. This implies, at the least, TINCVS COMMI FILIVS. The latter is the interpretation favoured by Hübner, in the new Pauly (s. v. *Britanni*, p. 867, l. 39), who adds: *Den Namen mit Evans zu Tincommius zu ergänzen, liegt, soviel ich sehe, kein Grund vor* (1897).

In 1877, Mr. Ernest Willett published in the *Numismatic Chronicle*, xvii. 309–33, a paper on "some Recent Additions to the Ancient British Coinage of the South-Eastern District"; and, in 1880, in the *Sussex Archaeological Collections*, xxx. 1–30, a second paper

on "Coins of Commius and his Sons". Mr. Willett had carefully examined ninety-six coins of "Tincommius", and in plate iv of his second paper he gave a conspectus of eighteen types of those coins. These papers were unknown to Mommsen in 1883.

In that year Mommsen was necessarily precluded from knowing the additional evidence derived from Mr. Willett's papers and from other sources, which was brought forward by Evans in his *Supplement* of 1890. Evans there quotes a coin of the same type as that bearing the legend **MMIOS**, which shows the letters **COM**, thus confirming his view that the name on that coin is either **COMMIVS**, the name of the father, or **TINCOMMIVS**, that of his (probably eldest) son (p. 499).

In dealing with this coin in his previous volume, p. 158, he had urged that, if Commius actually struck inscribed coins, we ought to find all three of his sons commencing their coinage on the same model as the coin of their father, whereas "it is only on some of those of Tinc[ommius] that this type appears".

But, if (as is probable) Tinc[ommius] was the eldest son, he may have been the first of the three sons to issue coins stamped with his name, and the resemblance between the coin inscribed **COM** or **OMMIOS** (Evans, i. 10) and that inscribed **TINC COMMI·F** is so close that the second may be a copy of the first; the first is either a coin of Commius, or is the first experimental issue of the coins of Tincommius. [See **Pl. IV. 1** and **2.**]

Thirty-eight further specimens of **TINCOM** coins, bearing the legend and a supposed "zigzag ornament between three corded lines across the field", had formed part of the great find near Selsea, and had been examined by Mr. Willett. They established the

fact that "what was regarded as a mere zigzag ornament is, in fact, the legend COMMI, the last three letters all conjoined".[4] In Evans's *Supplement* an example of this from the Selsea coins is given showing TINCOM above, and OMMI below, in the spaces between three beaded lines.[5] This coin is now in the British Museum. Another specimen (as I learn from Mr. G. F. Hill) is figured in the Catalogue of the Carlyon Britton Collection, i (1913), Pl. i. 40, which I have seen in the Fitzwilliam Museum Library. This shows in line 1, NCOΛ, and in line 2, OMM [Pl. IV. 9].

The name Tincommius is also confirmed by a small silver coin found near Selsea bearing on the obverse the legend TINCOM with "a beardless head in profile to the right, the fillets of a diadem falling behind",[6] while "on another example are some traces of a laurel wreath". On the reverse is "an eagle standing facing, with expanded wings, the head turned towards the right". "The workmanship and lettering are quite Roman in their character, and the types recall a small brass coin of Augustus, though the head of the eagle is in that case turned to the left" (Cohen, 2nd ed., No. 29). Thus we have a coin of this son of Caesar's contemporary, Commius, made in imitation of a coin of Caesar's adoptive son, Augustus, the very person who here describes Dumnobellaunus and this second British king as his suppliants.

We do not know why that eldest son of Commius sought the protection of Augustus, but I observe that

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[4] Evans, Pl. ii. 2. 3, p. 500 [Pl. IV. 7 and 8].
[5] Evans, Pl. xviii. 8, p. 502 f. [Pl. IV. 10 and 11].
[6] Cp. Evans, Pl. xix. 1, p. 505 [Pl. IV. 5].

each of his two younger brothers, Verica and Eppillus, calls himself **REX** on some of their coins.[7] It is not impossible that the eldest brother may have felt aggrieved by their assumption of the title, and may have unwisely hoped for further recognition with the help of foreign influence. But it seems more probable that the prefix of his own title has already a recognition of his princely position.

In the Irish Dictionaries of O'Brien and O'Reilly, I find *Tan* defined as "a prince", and *Tánaiste*, as "a lord or dynast, a governor of a country, a presumptive and apparent heir of the reigning prince or lord". The Latin *stannum*, or Irish *stan*, corresponds to our *tin*. The title Tin-commius, formed in some way from *Tan*, may have been given to the eldest son of Commius, while he was his father's heir presumptive, and may have been retained on his father's death. Sir John Rhys in his *Celtic Britain* (ed. 3, p. 318) has some remarks on the comparative philology of the name, which do not inspire complete confidence.

After writing this paper I referred to Mr. Rice Holmes's excellent work on Ancient Britain. On p. 365 he is wrong in saying that all the three sons of Commius used the title of **REX**, but he is possibly right in finding a common object for the appeal to Augustus made by Tincommius and Dumnobellaunus. Tincommius, finding that Eppillus and Verica were leagued against him, may have made common cause with Dumnobellaunus, who had himself been expelled from Kent by Eppillus (pp. 365–7).

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[7] Evans, Pl. ii. 10. 12; iii. 5 (Verica) and iv. 1 (Eppillus). [Pl. IV. 14 (Vir. Rex).]

If we now go back to the *lacuna* in the *Monumentum Ancyranum*, I feel that there is little doubt as to the identity of the second British king. If we accept his identity with the person whose coins have been partly passed in review, our choice in filling the *lacuna* seems to lie between following Mommsen and Hübner in supposing that his name was TINVS (or TINCVS) COMMI F, or Sir John Evans in supposing that it was TINCOMMIVS. Holder in his *Altkeltischer Sprach-Schatz*, in his second volume, published in 1904, quotes the legends of this prince's coins from Evans's first volume, but has not included the legends recorded in the *Supplement* of 1890. He states, however, that Tincius is a frequent Gentile name in Gaul.[8] It is possible that both forms of the name may have been in use, but the fact that not only TIN or TINC, but also TINCOM, is found on the coins, is in favour of regarding TINCOMMIVS either as the only or at least as the ultimate form of the name. Possibly, however, the eldest son of Commius may have been first known as TINCVS, and the full name TINCVS COMMI FILIVS may have suggested the combined name TINC + COMMIVS, and ultimately TINCOMMIVS, which was abridged on coins as TINCOM.

In choosing between the two alternatives for filling the *lacuna* we have to consider the available space. Mommsen reckoned this as equivalent to about sixteen letters in the space between *Tim* and *orum*; deduct seven for *Sugambr*, and nine remains; deduct two for

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[8] My friend, Dr. Reid, reminds me of T. Tinca Placentinus, in Cicero, *Brutus*, 172, and Quintilian, *Inst. Or.* i. 5. 12. Coming from Placentia, in Cisalpine Gaul, this name is almost certainly Celtic, thus supplying us with fresh evidence in favour of *Tinc-ommius*.

space before a new clause beginning *Sugambr*, and seven remains (not six as printed in Mommsen's text).[9]

To fill the *lacuna* by proposing TIN|CVS·COMMI·F requires the space of nine letters after TIM, and, besides, we are not at liberty to use F for *Filius* in this inscription. In the new and still unpublished fragments discovered by Sir William Ramsay at Antioch in Pisidia, and identified by him as part of a local copy,[10] we find FILI(us) after *regis Phratis* in the first line of this column, showing that *Filius* would have been given in full, if used at all at this point. We also find *Orodis Filius*, in full, three lines lower in the *Mon. Anc.*

The space allows of the insertion of only seven letters, and we obtain those seven letters by inserting the seven letters of COMMIVS, in other words by reading TIN|COMMIVS.

As regards the traditional TIM, Tournefort (as admitted by Mommsen) may have mistaken the first two strokes of an N for part of a mutilated M. TINC- or TINCOM-, the spelling on the coins, is confirmed by the phonetic principle that the transition from the "front-palatal" N to the "back-palatal" K-sound in INC is more natural than any transition from the labial M to the "back-palatal" K-sound in IMC. The sequence INC is supported by the same combination of consonants in *tinctus*, *vinctus*, *vinco*, &c., and, above all, in *sinciput* for *semi-caput* or *sim-ciput*.

J. E. SANDYS.

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[9] Britann[o]rum Dumnobellau[*nus*] *et Tim* . . . . . ; [*Sugambr*]*orum* | Maelo.

[10] Sir William Ramsay kindly sent me these fragments before they were printed for *The Journal of Roman Studies*.

Key to Plate IV.

1. [Co]mmios. Evans, Pl. i. 10. [Brit. Mus.]
2. Tinc. Commi. F. Evans, Pl. i. 11. [Hunterian Coll.]
3. Tinc. C. F. Evans, Pl. i. 13. [Brit. Mus.]
4. Tinco. Evans, Pl. xviii. 5. [Brit. Mus.]
5. Tincom. Evans, Pl. xix. 1. [Evans Coll.]
6. Tin. Com. F. Evans, Pl. xviii. 13, 14. [Burstal Sale, lot 15.]
7, 8, 10, 11. Tincom. [Co]mmi. Evans, Pl. ii. 2, 3; xviii. 8. [Brit. Mus.]
9. Similar. [Carlyon Britton Sale, i, lot 40.]
12. Virri. Eppi. Com. F. Evans, Pl. iii. 7. [Hunterian Coll.]
13. Eppil. Com. F. Evans, Pl. iii. 9. [Hunterian Coll.]
14. Com. F. Vir. Rex. Evans, Pl. ii. 10. [Burstal Sale, lot 13.]
15. Dubno[vella]unos. Evans, Pl. iv. 10. [Brit. Mus.]
16. Dubno. Evans, Pl. iv. 11.

IV.

GLASS WEIGHTS.

THE subject of glass coin-weights has not received much attention, partly owing to most of them being inscribed in Cufic, in which so many letters are alike. This has deterred most collectors, and series are seldom to be seen. Three collections are about equal in size, 500 to 700 each—the British Museum, Dr. Fouquet's in Cairo, and what I have gathered at University College. The former two are already published, and in course of preparing the latter collection for publication, some fresh points have come to light which may be of general interest.

Roman monograms have scarcely been explained so far, but the glass weights serve to show the system of reading, by giving some explanations. For those in the British Museum the references are to Dalton's *Catalogue of Early Christian Antiquities*; those in the coin collection are unpublished, and now inaccessible. The most complex monogram, and most certain, is B. M. 664, with an inscription of the eparch Iohannes, who ruled under Mauricius Tiberius; this surrounds a monogram which contains every letter of the double name of the emperor, MAYPIKIOY TIbEPIOY. Another certain example is the monogram on the Esquiline dishes, B. M. 312, 315, which has been strangely "read by Visconti as PROIECTA", but is plainly the name

on the vase 307, **PELEGRINA.** The next help is from the list of eparchs, of whom sixty-seven are now known in three centuries, so that a minority of the monograms on weights should be found among them (see de Ricci in *Proc. Soc. Bib. Arch.* xxiv. 97). Of these we may reasonably identify the monograms

of Strategios, A.D. 349; Hadrianos, A.D. 376–7 (also in B.M. 679); Bassianos, A.D. 381, and Antoninos, who followed him in 383–4; and Gennadius, A.D. 396 (B.M. 680). These serve to show the general system of prominence of the main letters, every letter of the genitive case being usually found, and no superfluous strokes. Other names, not known historically, which may be indicated by monograms are Damianos (B.M. 453), Menōnos

(B. M. 675), Paetos (B. M. 676), Karpos (B. M. 982), Ennodios (B. M. 434), and in University College, Pappos, Drakōn, Sergios, Soteiros, Danaos, Kyros, and Nikianos.

In the *Arabic series* some new names of historic value have come to light. A dinar weight of the Khalifah al Walid II is the first known of him, and differs from all of that age, in the blue-green colour and the rough cursive style of lettering, like that of later time. It seems to belong to some different centre of work. The name of the old Chief-Justice Ghayuth ibn Suluyman, the indispensable honest judge who held office three times in thirty-three years, has come to light on a weight, probably showing that he held the finance at one time. A very fine dinar weight bears the inscription, "The servant of God Ismail, amir of the faithful. In the name of God. Order of the Imam Mansur: by God is exactness and justice." No weight of him is known before, and apparently he never entered Egypt, which was only conquered by the Fatimites in the sixteenth year of his successor, al Muizz. A coin of al Muizz was, however, dated in Cairo in his first year, by his adherents in Egypt; and this weight of al Mansur shows that in the previous reign partisans were already holding to the Fatimite pretensions before A. D. 953. The work of this is better than even the best of al Muizz. Another unique piece is a double dirhem weight of the theoretical ruler, "the expected Imam", or Imam al Muntasir, A. D. 1131. Another new name is that of Ali al Mansur, 1257–9, the latest dated weight known.

The *dating of private weights* has hitherto been placed in the Memluk period. This is contradicted

by the style of that of Ali al Mansur, which is far more decadent, and therefore later, than the private weights. A positive evidence is that a weight of Muhammed al Ayudi has the numerical date A.H. 411 = A.D. 1021. This is corroborated by a corrected reading of one of Fouquet's, as year A.H. 480 = A.D. 1087. These datings carry all this class of private weights into the age of al Hakim to al Amir, A.D. 1014–1130. They differ from the official weights by being in common cursive, and not monumental, style; but the cursive already in use then is far more degraded than that on these weights. There is no reason for dating them any later than above stated.

The *history of dies* has been traced by getting together long runs of duplicates, as many as eighteen of one die. The deterioration by wear can be traced, the recutting, and the last stage of roughly deepening the letters without understanding them. This tracing of dies leads to other results under the next head.

The *weight standards* have been found to require extraordinary accuracy in determination to detect the minute errors of manufacture. The first question is the meaning of the fals weights, based on the kharrubah. The Greek *keration*, Roman *siliqua*, and Arabic *kharrubah*, all mean the carob, and, as Poole showed, the qirat and kharrubah are equal. All is plain on the matter of names and identities. When the dated weights in given numbers of kharrubahs are put together, the kharrubah is seen to vary from 3·017 to 3·116 grains in A.D. 714–50, while it is 2·973 to 2·983 grains in A.D. 750–80. Thus there was a slight change of standard. But this is too high for the normal siliqua, as it would give an uncia of 441,

reduced to 429 grains. This is, however, a known Egyptian variant of the uncia, made to agree with the Ptolemaic or Alexandrian octodrachm, 439 under Ptolemy I, 436 in the whole series. So it is clear that the Alexandrian system produced a modified uncia, and this is the parent of the Arabic kharrubah standard.

What, then, is the meaning of a fals of various numbers of kharrubahs, 13 to 33? It is absurd to suppose that copper coins were carefully checked by weight, like gold or silver. Fals may mean any coin, as in its plural *falus* for money in general. The most usual weights of it are 24 and 30 kharrubahs, or 4 and 5 scripula, and these equal 72 and 90 grains, or just the Byzantine solidus and the double dirhem, two common coins for which no other weights are provided in this period. Probably all the other values of the fals were from other coins then current, anything between Italian and Persian.

The accuracy of making the dinar and dirhem weights continually deteriorated. The average error in the eighth century is 0·06 grain, or 4 milligrams; in the early Fatimites it is 0·12 grain, and increases to 0·37 grain in the close of that series. Thus it is clear that all such weights must be weighed to tenths of a grain. In the early weights there is yet finer accuracy; in 765 the half-dinar weights only vary from 32·51 to 32·67 grain; and in 780 the astonishing result of three weights is 32·662, 32·665, and 32·667 grains, or all within $\frac{1}{200}$ of a grain, or a third of a milligram. To reach such accuracy it was needful to use the finest chemical balance, with closed case, double weigh the glass weights against such other,

and read a long series of swings of the balance. How such accuracy was reached in the manufacture is incomprehensible. Nothing known of any other age at all approaches the fine weighing of the eighth century.

Another question is the accuracy of standards as distinct from the accuracy of copying. The long runs of duplicates were probably made from one standard, as they certainly come from one maker at nearly the same time. In the Fatimite period it is found that the errors of the standards were about the same as the errors of copying, showing that a great deal of care was given to the separate adjustment of the glass weights. It is evident now that the Arabic weights demand far more care than has generally been given to their determination.

These notes are the main points of the study and catalogue of these glass weights, which will be published after the war, like other catalogues of the University College collection.

W. M. F. Petrie.

V.

THREE ENGLISH NOTES.

A. Henry VI and the Calais Mint Engravers.

This king seems to have introduced a new system of payment by piece-work for the graving of dies in his mint at Calais, and inserted in two of the grants of office a fixed price for each pair of dies. The usual method of remuneration was by an annual salary which gave no clue to the actual cost of the workmanship involved, and therefore it is interesting to learn the sums which a mediaeval craftsman presumably regarded as fair payment for his labour in making the various dies for coins then issued.

The names of the gravers in the earlier part of the reign of Henry VI, and the dates of their several patents (which correct some of Ruding's dates), are as follows:

1 October 1422 (1 H. VI).

Gilbert de Brandeburg to be graver at £20 a year and to dwell continually in the Tower of London. (This was a reappointment, as Henry V had given the office to him on 14 February in the same year.)

23 November 1431 (10 H. VI).

John Orewell, goldsmith, to be graver during pleasure at the Tower and at Calais, with £20 a year for the dies within the Tower as his predecessor had received, and 20 marks (13·6·8) for those at Calais, so long as the quantity of money coined there did not become less. On 18 August 1433 (11 H. VI) Orewell, having returned for cancellation his grant of 20 marks for Calais, obtained a new patent under which he was to receive payment from time to time for all manner of dies at Calais according to the size of each piece, namely, for each piece of the dies for nobles, eightpence; for each piece for silver groats and half-nobles, sevenpence; for each piece for half-groats, sixpence; for each piece for pence, and sterlings (or farthings) of gold, fivepence; and for each piece for half-pence and farthings of silver, fourpence. To be paid from the revenue arising from the mint

at Calais, and the graver shall go there when required to make dies.

26 November 1445 (24 H. VI).

Thomas Wythiale, goldsmith, to be graver for life at the Tower of London and town of Calais, with £20 a year derived from the port of London, in place of the agreement with John Orewell. (There is no mention of any separate remuneration for the appointment at Calais.) Wythiale held the office for nearly six years, but his name is not included in Ruding's list of engravers during this reign.

13 May 1451 (29 H. VI).

William Wodeward, citizen and goldsmith, to be graver for life at the Tower and at Calais with the usual fees and wages, in place of the grant to Wythiale then surrendered. On 14 June 1452 (30 H. VI) Wodeward in turn surrendered his patent, no fees having been specified therein and no payment being obtainable, and received a new grant with a fee of £20 a year for the dies within the Tower, payable from the farm of the profits of London and Middlesex; and wages for the dies at Calais according to the size of each piece, in terms identical with Orewell's patent of 1433 (*supra*), payable from the revenue of the mint there, as Orewell had held the office. Wodeward continued to be graver until 24 September 1457 at all events, as the pay attached to the office was then confirmed to him, it having been annulled by a statute of 33 Henry VI.

(The respective grants will be found in the calendar of Patent Rolls *sub annis.*)

It will be noticed that there is a singular lack of uniformity in the conditions attached to the foregoing appointments. With regard to the grant of 1433, it would appear at first sight that the number of coins struck at Calais was so diminished in that year as to move the king to revoke (in accordance with the proviso of 1431) John Orewell's salary of 13·6·8 and to substitute therefor the piece-work rates. This inference, however, is not supported by the quantities of bullion coined which Mr. F. A. Walters has tabulated in *Num. Chron.*, 4th ser., xi, p. 171. The amount for 1433 shows no material reduction in the annual output when compared with the average of the figures for the years 1428–31, but Mr. Walters was unable to verify the amounts or the dates as Ruding did not give a precise reference to the documents from which he quoted. On the other hand, it may be that the change of remuneration in 1433 was anticipatory only, in view of an intended reduction of activity at Calais.

But in the year 1436 the silver bullion coined was 1770 lb.[1] only, as against 26182 lb. in 1433, so that in this instance we have an adequate reason for the graver being remunerated on the basis of no dies, no pay. The figures for 1436 are the latest for Calais which are at present known.

We then reach Thomas Wythiale in 1445, and it would seem that the mint at Calais was then dormant for a time as the graver was allowed merely the ordinary fee for the duties at the Tower, although he was nominally appointed also to Calais. This view accords with Mr. Walters's belief that from 1440 or thereabouts the greater part of the English silver coinage was no longer struck at Calais but at the Tower.

Then in 1452 comes the second grant to William Wodeward, who has to be paid by piece-work at the Anglo-Gallic mint; this denotes, I think, a partial revival at that establishment, sufficient at all events to provide a limited amount of employment for the graver. Mr. Walters thought (*op. cit.*) that some of the coins described by him indicated that the mint at Calais was working to a small extent late in Henry's reign, notwithstanding the absence of any accounts for that period. This opinion is apparently confirmed by the terms of Wodeward's second appointment when they are compared with those offered to his immediate predecessor.

When searching the Patent Rolls between 1422 and 1460 I was not able to find any reference to the making of the dies for the royal mint at York, and consequently I assume that it was the duty of the Tower graver to provide such instruments for the country mints. This point was subsequently raised in the time of Edward VI, when a claim by Robert Pitt, of the Tower, for extra payment was disallowed by the Exchequer auditor, on the ground that the salary granted by the letters patent covered the preparation of the king's dies at York.

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[1] This information was obtained by Mr. Walters directly from a Foreign roll among the Exchequer accounts at P.R.O.

B. The Galley-Halfpence of the Middle Ages.

In *Num. Chron.*, 4th ser., ii. 247 Mr. F. A. Walters expressed the opinion that these coins might be identified with the pieces known as Nuremberg counters, and he was able to claim at any rate a partial assent to his proposition by the authorities in the Medal Room. May I be allowed to reopen the question by offering a belated comment, and citing some additional evidence which seems to be inconsistent with the suggested explanation? Mr. Walters tells us that Ruding made no attempt to describe the galley-halfpence beyond a general statement that they were imported into this country in the galleys of Genoese or Venetian merchants. On this point I will quote from an author in the first half of the eighteenth century who defines with some explicitness, and, let us hope, with accuracy, the nature of these halfpence. Stephen Martin-Leake, Clarenceux King of Arms, says in the 1745 edition of his *Historical Account of English Money*, pp. 128–9, that they were "coins of Genoa" brought here by the galley-men with wine and merchandise; that they were "broader than the English halfpenny but not so thick", and that they were perhaps of base metal, as statutes were passed in 11 and 13 Henry IV (1409–11) prohibiting their circulation, and forfeiting them when found. There is also a reference to Stow's *Survey of London*. Bishop Fleetwood in *Chronicon Preciosum* (1707), p. 59, also mentions these "small pieces", but his remarks are less precise than those already quoted. Assuming that Leake was a competent observer, a qualification which might be expected in one who held the office of Clarenceux, there would appear to be little need for further inquiry beyond the task of deciding which of the coins of mediaeval Genoa could have reasonably circulated in England as a halfpenny.

But apart from this consideration I would venture to doubt the probability of jettons, whether of Nuremberg or elsewhere, being accepted as money in this country during a long period, save in isolated cases of deliberate fraud. It seems to be clear that the galley-halfpenny "which did commonly run in the realm for payment", to use the words of the statute of Henry IV, was a coin which might be passed as a silver halfpenny, namely, with a diameter of about 0·55 inch, and a weight of about 9 grains. On the other hand, the jettons found in England exhibit an endless variety of sizes and types, the metal being copper or one of

its alloys in the great majority of cases at the beginning of the fifteenth century. Therefore in addition to the difficulty as to size it would be needful to assume that the imported jettons were all fraudulently plated in order to give them a chance of being successfully circulated as lawful money.

Quite recently the jetton and its uses have been exhaustively discussed by Mr. F. P. Barnard in *The Casting-counter and the Counting-board* (1916), a treatise which explores the history of such pieces both here and on the Continent. I can find nothing in his pages which gives support to the "galley-halfpence" theory, although there are many references to coin-types which were imitated more or less closely on some of the early jettons, either with or without a cautionary legend. An examination of the plates shows that certain pieces, believed to have been made at Anglo-Gallic mints, bear a resemblance in size and type to the Edwardian pennies of the thirteenth and fourteenth centuries; others, again, of Italian origin are similar in size to our pennies of that period, but different in character. Both of these classes of jettons are, however, of copper or latten brass, and Mr. Barnard notes only one specimen in the two series which had been silvered; whether the plating was original or subsequent is not stated.

After the foregoing note was in type Mr. G. F. Hill wrote to me as follows:

"I would suggest that if the galley-halfpenny is really a Genoese coin, it is the *minuto* of the fifteenth century, with types: *obv.* Castle, *rev.* Long cross, sometimes with a lis in one angle. (See, for instance, *Corpus Numm. Ital.* iii, pl. iii. 21, 22 and iv. 6.) The average diameter of these pieces is about 15 mm. (0·6 inch); they are of billon, and the weights of the specimens recorded in the *Corpus* under Doge Antoniotto Adorno (1394–6) and Charles VI of France (1396–1409) range from 0·86 to 0·42 gramme (13·3 to 6·5 grains troy), with an average, out of 29 specimens, of 0·63 gramme (9·7 grains troy). These features exactly suit the conditions demanded. I may say that the possibility of the *minuto* being the coin in question occurred to me on glancing at the plates of the *Corpus* before I worked out the average size and weight of the specimens."

I welcome the result of Mr. Hill's investigation. It points to a series of coins which may well have passed as

galley-halfpence in this country, always supposing that Genoa was their place of origin. Has the *minuto* been found in English hoards of the fourteenth or fifteenth century?

C. The Siege Pieces of Scarborough, 1644–5.

Professor C. H. Firth has published in the *English Historical Review* for October, 1917 (xxxii. 568), a transcript of Sir Hugh Cholmley's narrative of the siege of Scarborough by the parliamentary troops during the civil war. The original document, which is believed to have been written in 1647, or early in the following year, is No. 1669 in the Clarendon MSS. at the Bodleian Library. Cholmley's annals of the siege, and the events which preceded it, are of very great historical interest, but my present purpose is to call attention to the few lines describing one of the obsidional coins then made, and to draw a conclusion from the evidence which the passage supplies.

The writer of the narrative was the royalist Governor of Scarborough town and castle, but owing to lack of men he was unable to hold the town for more than three weeks. After that period he withdrew his forces to the castle, where he was closely besieged by land and sea. Sir Hugh, as it appears, had borne the greatest part of the expense "upon his owne chardge and purse", but the time came when he too wanted money, and could not borrow. He records that he had proposed that every one in the garrison who had plate should contribute some of it to relieve the soldiers, but that those who possessed most were unwilling to part with it, and he then continues as follows:

"Soe that rather then to breed the least disquiett by taking any man's goods against his will, the Governor made use of the plaite which belonged to some persons hee had perticuler interest in, which was cutt in peeces and passed currant according to there severall weights, some of them had the stampe of a broaken Castle with this inscription 'Caroli fortuna resurgam'; by this meanes the officers and soldiors, which beganne to be verie clamourous, were for the present verie well settled . . ."

Students of civil war history will feel indebted to Professor Firth for enabling those who cannot visit Oxford to read this contemporary chronicle by the chief actor in the events

narrated. Numismatists, also, will in their sphere especially welcome the publication on account of the definite statement with regard to the siege money. The Governor specifically mentions only one among the various denominations of coins believed to have been then issued, but by a happy chance his allusion makes it possible for us to correct the generally accepted attribution which ascribes this particular siege piece to Colchester. The fragment of silver plate, with the inscription noted by Sir Hugh, bears no letters indicative of its place of origin; it is also without a date, and without marks of value. Possibly it was issued by an oversight before the currency value was stamped upon it. The British Museum *Handbook* classifies the piece under Colchester as a shilling, and illustrates it on Pl. xxviii. 667. The sale catalogue of the Bliss collection (1916, lots 462–3) contained two examples, one circular, the other an irregular octagon. They were attributed to Colchester, and described as pieces of two shillings, but in the absence of a statement as to weight their denomination seems to be uncertain, as they, like the Museum specimen, are not stamped. The other coins of Scarborough were apparently weighed and valued on the basis of seven or eight grains to each penny, but I am free to confess that my estimate shows a considerable margin of error in respect of some of the denominations.

Thus, documentary evidence has again come to our aid and enabled us to add yet another siege coin to the numerous fractional values issued for payments to the garrison of Scarborough Castle, and in this connexion I would mention that Mr. W. J. Andrew has shown good cause in *Brit. Num. Journal*, xi. 207, for a transfer of the so-called Beeston moneys to the citadel which Sir Hugh Cholmley so ably defended.

HENRY SYMONDS.

VI.

THE PERSIAN WEIGHT STANDARD IN MEDIAEVAL INDIA.

Mr. Vincent A. Smith in his *Coinage of the Gupta Dynasty* (*JRAS*, 1889), with reference to the heavy gold coins of Kramāditya, weighing 162·3, 162·5, and 169 grains, wrote (p. 119):

"The weight is very peculiar. The coins may possibly have been struck to the 100 *rati* standard of 182·5 grains, but it is much more probable that they were struck to the standard 'called by metrologists the Persian. . . . In the Persian standard the unit or drachm weighs 84–86 grains.'

"These coins of Kramāditya resemble in form the Persian *sigli*, and I have little doubt that they follow the Persian standard of weight, which had been used long before by the Bactrian kings."

Mr. Smith's mature opinion is embodied in his *Observations on the Gupta Coinage* (*JRAS*, 1893, p. 131):

"The coins in question date from about A. D. 500–600, and, on re-consideration, I do not think it likely that the recollection of the Persian standard survived so long. I would now refer them to the 100 *rati* standard."

The object of the present note is to record briefly certain cases of the survival in India of the Babylonian or Persian silver standard. Of its units, the value in grains of the tetradrachm is 345·68–346·30, of the stater 172·84–173·15, of the drachm or *siglos* 86·42–86·57, and of the obol or *dānik* 14·40–14·42.[1]

It was on this standard, as is well known, that the hemidrachms or *kāhāpaṇas* of the Western Kṣatrapas were struck. These were continued by the Guptas, and under the name of *dramma*, "drachma", by the Rāṣṭrakūṭas, and by the Kadambas of Goa.[2] In all these coins the full weight

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[1] G. F. Hill, *Handbook of Greek and Roman Coins*, p. 223.

[2] *Catalogue of the Indian Museum*, i, p. 314; weight, 37·8 grs.

of 43·2 grains was much reduced, the average being about 36 grains.

Traces of the same weight system appear in the Law Books. Thus Nārada (fifth to sixth century), after dealing with the Southern silver *kārṣāpaṇa* of 20 *māṣas*, describes the usage of the Panjab, in which he is followed by Bṛhaspati:

"A *kārṣāpaṇa* has to be taken as equal to an *aṇḍika*; four of these are a *dhānaka*; twelve of the latter are a *suvarṇa*, which is called *dīnāra* otherwise."[3]

The most complete table is that given in the ninth century by Mahāvīra in his *Gaṇita Sāra Saṅgraha* for metals other than gold and silver:[4]

kalā																
$6\frac{1}{4}$	=	1	*yava*													
25	=	4	,,	=	1	*aṁśa*										
100	=	16	,,	=	4	,,	=	1	*bhāga*							
600	=	96	,,	=	24	,,	=	6	,,	=	1	*drakṣāṇa*				
1200	=	192	,,	=	48	,,	=	12	,,	=	2	,,	=	1	*dīnāra*	
2400	=	384	,,	=	96	,,	=	24	,,	=	4	,,	=	2	,,	= 1 *satera*

Similar to this, but more Indian in character, is the table attributed to the Magadha country by Sārṅgadhara:

384 *yava* = 96 *guñjā* = 16 *māṣa* or *dhānaka* = 4 *ṭaṅka*
= 2 *draṅkṣaṇa* = 1 *kārṣa*.

According to Varāhamihira[5] the *aṇḍika* was equal to 4 *yavas* or barley-corns. Now Sārṅgadhara elsewhere makes the *guñjā* or *rati* equal to 2 barley-corns; the *Līlāvatī* (twelfth century) agrees with him, and specifically states that the barley-corns are large ones. The *guñjā* of the Magadha table, being of 4 *yavas*, must be the jeweller's double *rati*; at 1·8 grain the *rati*, the value adopted by Sir A. Cunningham, the weights given by our authorities work out as follows:

yava	*aṇḍika*, *aṁśa*, *guñjā*,	*dhānaka*, *bhāga*	*drakṣāṇa*, *ṭaṅka*	*dīnāra*, *draṅkṣaṇa*	*satera*, *kārṣa*
384 =	96 =	24 =	4 =	2 =	1
0·9	3·6	14·4	86·4	172·8	345·6 grs.

[3] *Minor Law Books*, xxxiii, p. 231, of *Sacred Books of the East*.

[4] Barnett, *Antiquities of India*, p. 207. Each *kalā* consists of 4 *pāda*.

[5] *Alberuni's India*, i, p. 162 (ed. Sachau).

We thus find that the *dhānaka* or *bhāga* is the correct equivalent of the Persian *dānik*, the *drakṣūṇa* or *ṭaṅka* of the siglos, the *dīnāra* of the didrachm, and the *satera* or *kārṣa* of the tetradrachm. It will be observed that the names of the *drañkṣaṇa* and *satera* (stater) have been transferred to the next highest unit in Sārṅgadhara's and Mahāvīra's tables respectively, and that the first named of these, though giving *dhānaka* as a synonym of *māṣa*, makes this, in conformity with Indian practice, the sixteenth of the *kārṣa*.

The table of weights in the *Līlāvatī* again shows traces of Persian influence:

96 *yava* =	48 *rati* =	16 *valla* =	2 *dharaṇa* =	1 *gadyāṇa*
0·9	1·8	5·4	43·2	86·4 grains,

the last two weights being the hemidrachm and the siglos. The term *gadyāṇa* was also used of the gold coins, styled *niṣka* in this work and in the Rāṣṭrakūṭa inscriptions; in the Canarese tables it was assimilated to Mann's *dharaṇa* of 32 *ratis*. The word is a foreign one, and perhaps may be akin to *gadhiya-* or *gadhaiya-*(*kā paisā*), the name applied to the debased imitations of the Sassanian drachma.

The siglos weight also seems to be the origin of the modern Bombay pearl *tank* of 24 double *ratis* or 72 grains, mentioned in Prinsep's *Useful Tables*, the *rati* being reduced to 3–3·3 grains.[6]

Finally, the *tola* of 12 *māṣas*, each of 8 *ratis*, used in Northern India, is identical in theory with the stater of 12 *dāniks*, both of these weights containing 96 single *ratis*. In practice, however, the *tola* weight was about 175 grains.[7]

H. W. CODRINGTON.

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[6] Cf. Elliot's *Coins of Southern India*, p. 49.

[7] At the rate of 1·825 grs. the *rati*, its full value according to Mr. Vincent A. Smith, the *dānik* weighs 14·6, the siglos 87·6, the stater 175·2, and the tetradrachm 350·2 grains. The early bent silver bars, weighing 169, 165·8, and 174·1 grains (*Indian Museum Catalogue*, vol. i), may be Persian didrachms.

NOTICES OF RECENT PUBLICATIONS.

A History of Ancient Coinage, 700–300 B. C. By PERCY GARDNER, Litt.D., F.B.A. Oxford: Clarendon Press, 1918. pp. xvi + 463. 11 plates. 18*s*. net.

PROFESSOR GARDNER states his aim as the treatment of Greek coinage to the end of the fourth century B. C. on the basis of the political and commercial relations of the various minting authorities. From the point of view of the historian, this is a valuable departure from precedent: the pure numismatist, as is remarked in the preface to the book, regards each city as if it were quite independent of its neighbours: and there was ample room for a work which traced the connexions of the issues of the different cities.

The clue to these connexions which Professor Gardner has followed lies in the standards of weight to which the issues appear to conform. On the assumption that, if the coinages of two cities are struck on approximately equal weight systems, there is reason to expect some passage of influence between the two, he develops an exhaustive account of the trading relations of the Greek world during the four centuries covered by his survey. The great difficulty underlying this line of argument is that the weights of Greek coins are so irregular: Professor Gardner himself points out in his introduction that it is often by no means easy to determine to which standard a given coin belongs: and it may be added that, as specimens of the same issue, in cases of the more common types, sometimes vary in weight to the extent of 20 per cent., it is rather risky to argue from the weight of an isolated example, as, for instance, is done in tracing the influence of the Abderite standard at Messene (p. 388).

It may be questioned whether the early Greek coins were intended to represent a particular value. If the stamp impressed on the coin by the issuing authority was supposed to guarantee that there was a certain weight of metal, experience would soon discredit the guarantee: in fact, Professor Gardner is "disposed to suspect that the scales were commonly in use" (p. 56), in which case the stamping of the coin was a mere waste of time. It seems much more

probable that the stamp was a guarantee of fineness alone: the authority certified that the coin was of good gold, silver, or electrum (which was clearly regarded as a distinct metal): and, if the authority had a satisfactory reputation, a merchant receiving the coin was saved the trouble of testing its composition, which was much more difficult than weighing it. This is a problem which would repay further investigation.

There are indeed very few series of Greek coins which suggest that an attempt was made to adjust the weights on any regular basis. Instances of the difficulty of finding an explanation for the variations of weight constantly recur in Professor Gardner's history: good examples are to be seen in the issues of Lycia (p. 183), Thasos (p. 188), Erythrae (p. 260), and Sinope (p. 264). And similarly there seems little evidence that Greek cities endeavoured to equate their standards of coinage: the result of the search for such equations is perhaps most noticeable in Professor Gardner's treatment of the coins of Abdera, where, dismissing Mr. Head's assumption that the standards followed were successively Rhodian, Phoenician, Aeginetan, and Persian, he concludes that the Abderites, on founding the city, instead of adopting the standard of their mother-city or their neighbours, invented an entirely new one, which they used for about a century, and then abandoned in favour of the Aeginetan just about the time when the commercial influence of Aegina was finally extinguished.

As a matter of fact, in nearly every case the supposed change of standard is simply a diminution in the average weights of the coins struck. A Greek mint often—perhaps normally—used old coins for restriking; and this alone would explain the diminution in weight, even if the "profiteering" motive for depreciation, familiar enough in later times, is not assumed to have been present. Professor Gardner recognizes this tendency to a fall in weight (p. 286), but connects it with outside influences instead of with internal development.

There is a danger, in the consideration of Greek monetary problems, of applying not only modern but Western commercial principles. Professor Gardner remarks that "gold could not be permanently at a lower value in the northern cities of Ionia than in the southern, distant only a few hours' sail" (p. 179); but experience of the modern exchanges of Constantinople and Smyrna would suggest a different view. And the idea of a "standard", as understood in England, is not traceable in the records of ancient transactions which

we possess: the voluminous evidence provided by Greek papyri from Egypt show that, if a "standard" is quoted, it may have been a public or a private one, and in fact probably meant the nearest available pair of scales: and occasional equations show a variation in standards of over 10 per cent. Very similar variations can be found commonly in Asia Minor to this day, and they are not unknown in the country districts of Greece.

There is one instance in Greek history of an attempt to enforce standards in the modern sense: Athens required her subjects and allies to conform to her systems of weights and measures. And it is noteworthy that the Athenian coinage of the period of her hegemony is the only one which attains to anything like the exactness postulated by a modern mint; the tetradrachms in particular are very carefully adjusted, and show a remedy of less than a grain. But it may be doubted whether the decrees of Athens had much effect in the outlying parts of the empire: and they certainly had none after the compelling power collapsed.

It is natural that a work which breaks so much fresh ground as Professor Gardner's should suggest many points of discussion, running beyond the limits of a review. But we may summarily describe the book as a most important and stimulating contribution to Greek history: the Introduction, in particular, contains an excellent account of the economic problems connected with Greek numismatics: and, if future investigators wish to go farther afield, they will find here a safe starting-point.

J. G. M.

Estudio de Arqueologia Cartaginesa. La Necrópoli de Ibiza. Por Don Antonio Vives y Escudero. Madrid: Junta para Ampliación de Estudios e Investigaciones Científicas. 1917. pp. xlviii + 189, with 106 plates. 20 pesetas.

Don Antonio Vives's energy is inexhaustible. We have here an extremely well-illustrated and elaborate scientific account of the archaeology of the remarkable Necropolis of Ibiza. The coins of Ebusus themselves do not offer much variety. The usual type, for the most part repeated on both sides of the coin, is the Cabirus to front, holding a serpent (or is it a serpent-sceptre?) in his left hand. Almost the only

other type is a bull; but the author includes in the series a small uninscribed coin with the sign of Tanit on one side and a caduceus on the other. A few coins have a Neo-Punic inscription on the reverse; and there are some Latin coins of the early Empire. Señor Vives has, however, taken the opportunity, for which we must all be grateful, of putting together on plates cii–civ a number of the more important Carthaginian coins, collected from various Museums, whether struck in Carthage or in her dependencies; one is especially glad to have the coins of the Barcide period struck in Spain conveniently illustrated. Pp. xliii–xlv of the Introduction give a brief account of the subject. Collotype has been used for the reproduction of the coins, with very fair success.

G. F. H.

The Equestrian Officials of Trajan and Hadrian: their Careers, with some Notes on Hadrian's Reforms. By R. H. Lacey. Princeton University Press; London, Milford; Oxford University Press. 1917. pp. 87.

Dr. Lacey's very careful and elaborate dissertation contains fully documented accounts of the careers of ninety-six officials; a chapter on the Reforms of Hadrian as they affected the Equites; and full Indices. There is little in it that concerns the numismatist directly, but we may note that among the officials are three men who were *procuratores monetae* (L. Vibius Lentulus, P. Besius Betuinianus, and L. Domitius Rogatus), and any list of officials such as this is always likely to be useful.

G. F. H.

MISCELLANEA.

A Further Note on Die-positions.

My study of the Chian series strongly inclines me to support Mr. Milne's theory on the above subject as expressed in his note in *Num. Chron.*, 1917, pp. 315–16. The evidence in my possession is not so conclusive as Mr. Milne's, because I did not give full attention to the question of identity of dies since it had no particular bearing on the line of inquiry that I was pursuing.

But the following facts chosen from my descriptions of the imperial period seem to me to confirm the suggestion now put forward that the dies of certain ancient mints were not fixed, as has hitherto been supposed, but were only symmetrically arranged.

All eleven specimens of my type No. 83 (*Num. Chron.*, 1917, pp. 225–6) are struck from irregularly placed dies, i. e. dies occupying any position other than ↑↑, ↑↓, or ↑← (the last indicating both transverse positions). This shows that none of the dies for that particular group can have been fixed, which is strange if the system of fixed dies had once been adopted, as we had been led to conclude from the evidence of many earlier types.

For instance, type No. 62, α and β (*Num. Chron.*, 1916, pp. 308–12), is represented by 294 specimens, the dies for the bulk of which are arranged ↑↑. Although I do not possess records of quite all the pieces referred to, I can vouch for a very large proportion of them, and out of these the exceptions, which are arranged ↑↓, number only 7.

This case, previous to Mr. Milne's new suggestion, might have been accepted as ample proof that the dies of these coins had been fixed, the few exceptions being presumably due to broken hinges or careless repairs. In the case of type No. 83, however, which includes at least four different reverse dies, it is highly improbable that all the dies should have had their hinges broken, or even that the method of fixing the dies by means of a hinge, if once adopted, should have been temporarily abandoned. But, if we assume, with Mr. Milne, that the symmetrical arrangement of the dies was

obtained by marking the upper one in some way, it is then plausible to suggest that the making of such a mark may have been overlooked at certain times. And the period to which I am attributing this type No. 83, on the border between autonomous and imperial times, is especially favourable to such an omission.

The two specimens of type No. 96 β (*Num. Chron.*, 1918, p. 15) are almost certainly from the same dies, yet show the two positions ↑↓ and ↑↗, the latter probably intended for ↑↑.

The four specimens of type No. 97 β (p. 16 as above) are also struck from the same dies in all probability, but show the three different positions, ↑↑, ↑↓, and ↑←.

These instances could easily be multiplied, but I have confined myself, in selecting them, to the rare coins which seem the most likely to have been struck from identical dies.

Finally, there is one case about which I have no doubt, the two specimens representing type No. 107 β (pp. 20–1 as above). These are from the same dies and yet show the two positions ↑↓ and ↑↑.

J. Mavrogordato.

VII.

A RECENT FIND OF MAGNA-GRAECIAN COINS OF METAPONTUM, TARENTUM, AND HERACLEA.

[See Plates V, VI.]

In the autumn of 1916 a British soldier unearthed in a garden in Salonica a box containing a quantity of coins belonging to various categories which had evidently been buried by some one who had collected them for commercial purposes. There were, besides some modern Afghan pieces, a series of Parthian and Sassanian silver coins, about 240 Roman silver and bronze, some tetradrachms of Athens and of Alexander the Great, one or two stray Magna-Graecian specimens, and a homogeneous series of 75 didrachms of Metapontum, Heraclea, and Tarentum. These latter were distinguished from the other coins of the deposit by the raw condition of their surface, due to over-cleaning with some strong acid, and evidently belonged to an ancient hoard. That they had been procured by their owner in Southern Italy was shown by the inclusion among them of one or two earlier and later coins of Tarentum,[1] and a very late piece

[1] These coins, which have been omitted from the annexed list, included an early Tarentine didrachm with the Wheel type and two answering to Period VIII, A 4 and B 1 of my *Horsemen of Tarentum.*

of Metapontum,[2] showing a different condition of surface.[3]

This discovery has had a remarkable epilogue. The coins were brought by the finder to London, where the Magna-Graecian specimens came into my possession, and an examination of them led me to recognize as undoubtedly belonging to the same hoard a series of didrachms of the same Magna-Graecian cities belonging to the collection recently bequeathed to the British Museum by Mr. John Gorman Ford. These pieces not only cover the same period as the others, but they are characterized by the same undesirable condition of the surface, due to cleaning them with strong acid. In corroboration of this, moreover, I was able to ascertain the fact that, some six or seven years since, Mr. Ford had visited Taranto and there acquired a number of pieces belonging to a recently discovered Magna-Graecian hoard. In the subjoined list I have been able, thanks to the courtesy of Mr. Hill, to include fifteen specimens of the Ford coins, here all marked with asterisks.

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[2] This coin weighs 52·5 grains (*c.* 3·4 grammes), answering to the weight of the Hannibalic stater, and exhibits a late head of Athena.

[3] Thanks to the kindness of Mr. E. S. G. Robinson, I have also received two impressions of Velian coins from the same lot. One of these (weighing 114 grs.) shows a large Athena head on the obverse, and on the reverse Γ beneath the line (as Carelli, *N. I. V.*, Pl. cxxxvii. 19). It is a good deal worn. The other (weight 113·5 grs.), with A behind the obv. helmet and beneath the lion, above which is an owl r., corresponds with B.M. Cat. 108. It may come within the earlier limits of the hoard, and possibly belongs to it.

METAPONTUM.

No.	Obverse.	Reverse.	Condition.	Weight (grs.).	No. of specs
1	Head of Demeter r., transparent veil. (On either side of neck Α - Π)	ΜΕΤΑ Mouse on leaf; Φ below. (B. M. Cat. 121.)	Much oxidized.	108·5	1
2	Female head r., wearing stephanê with honeysuckle decoration and triple earring. Cross torch of Demeter behind.	ΜΕΤΑ ΙΗ above barley-leaf.	Worn.	113·7	1
3*	Tetradrachm. Head of Leukippos; quadriga driven by Nikê on helmet. Behind, ΑΠΗ and half-ion.	ΜΕΤΑΠΟΝΤΙΝΩΝ Club above barley spray; ΑΜΙ below. (B. M. Cat. 75.)	Slightly worn. Pl. V. 1.	236·6	2
4	do.	do.	Much worn.	234·0	
5	Didrachm. Head of Leukippos in plain Corinthian helmet r. Lion's head behind. Α under chin.	Same as 3, but inscr. ΜΕΤΑ (B. M. Cat. 76.)	Good condition. Pl. V. 2.	121·5	7
6	do.	do.	Much worn.	114·7	
7	do.	do.	Worn and oxidized.	119·9	
8	do.	do.	do.	115·8	
9	do.	do.	Much worn.	115·5	
10	do.	do.	do.	118·0	
11	do.	do.	do.	115·4	
12	[ΛΕΥΚΙΠΠΟΣ] Head of Leukippos as before; behind,	ΜΕΤΑ Dove with open wings above barley-leaf; be-	A good deal oxidized.	117·0	1

No.	Obverse.	Reverse.	Condition.	Weight (grs.).	No. of specs.
	dog seated [below, ϛ]	neath, AMI (B. M. Cat. 79.)			
13	ΛΕΥΚΙΠΠΟϛ Same.	Krater above barley-leaf.	Good condition. Pl. V. 3.	114·8	1
14	Same.	Uncertain.	Worn.	117·5	1
15*	Head of Demeter l., wearing barley wreath and ear-ring. Hair rolled behind.	ΜΕΤΑ (as on the rest of the series). In field to l., caduceus.	Oxidized and poor.	111·9	1
16*	Diademed head of bearded Heraklês r. Behind neck, club.	Field uncertain.	*Obv.* slightly worn; *rev.* oxidized. Pl. V. 4.	113·1	1
17*	Bearded head of Leukippos, but helmet somewhat more thrown back than Nos. 3–14. No inscription in front. Behind neck, ΔΙ	Triskelês or triquetra of legs above barley-leaf; beneath, ΦΙ	Fine. Pl. V. 5.	121·5	1
18	Young head of Demeter Korê to l., barley-crowned, her hair falling down behind and streaming forwards in front of neck.	Caduceus above, barley-leaf beneath - - X	Much worn.	115·0	1
19	Similar.	Winnowing fork above barley-leaf; beneath, ϟA	Somewhat worn. Pl. V. 7.	118·5	
20	Same.	Same.	Much worn.	117·9	5
21	Same.	Same.	Much worn and oxidized.	121·8	
22	Same.	Same.	Somewhat worn.	116·5	

No.	Obverse.	Reverse.	Condition.	Weight (grs.).	No. of specs.
23	Similar to 18.	Tongs above barley-leaf; beneath, ϟA	Worn and badly struck. Pl. V. 6.	117·8	1
24	Similar.	Griffin above barley-leaf.	*Rev.* good. Worn and oxidized.	119·6	1
25	Similar.	Above leaf, Artemis running r.; beneath, ΛΥ (B. M. Cat. 113.)	Much oxidized and worn.	116·0	1
26	Head of Demeter to r., hair falling down behind and streaming forwards in front of neck.	Nikê above barley leaf.	*Obv.* worn; *rev.* fair.	111·9	1
27	Similar.	Plough above barley-leaf; beneath, MAX	Much worn.	118·0	
28	Same.	Same.	Much worn.	113·2	4
29	Same.	Same.	do.	113·5	
30	Same.	Same.	A good deal worn.	115·3	
31	Same.	Star above barley-leaf.	A good deal worn.	114·9	1
32	Young head of Demeter Korê l., barley-crowned, the hair falling down behind; no locks in front of the neck.	Distaff wound with thread above barley-leaf.	*Obv.* eroded; *rev.* brilliant.	118·0	
33	Same.	Same.	*Obv.* a good deal eroded; *rev.* fine.	111·7	3
34	Same.	Same.	Slightly worn.	118·2	

No.	Obverse.	Reverse.	Condition.	Weight (grs.).	No. of specs.
35	Similar.	Cock above barley-leaf.	*Obv.* a good deal eroded, but *rev.* good.	116·5	1
36	Similar.	Similar; uncertain symbol. (Bird? and poppy-seed.)	Fair, but badly struck.	120·0	3
37	Similar.	Uncertain.	Oxidized.	120·0	
38	Similar.	Uncertain.	Fair, but somewhat eroded.	115·8	
39	Head of Demeter Korê to r., hair falling down behind, but not in front of neck. Behind, ΔΙ	Above barley-leaf, thymiaterion; beneath, ⊢Α	Good, but *obv.* somewhat eroded. Pl. V. 8.	114·5	1
40	Similar; behind, ΔΙ	Amphora l. above barley-leaf; beneath, ⊢Α	*Obv.* good; *rev.* a good deal oxidized.	109·8	2
41	Same.	Same.	Fair, but badly struck.	118·0	
42	Similar.	Same.	Surfaces lost.	115·5	2
43	Same.	Same.	do.	112·4	
44	Similar. No inscription.	Amphora to r. above barley-leaf; beneath, Φ(Ι)	Fair.	117·5	1
45	Similar. No inscription.	Two amphoras above barley-leaf; beneath, ΦΙ	Good. Pl. V. 11.	124·0	4
46	Same.	Same.	Good.	117·0	
47	Same.	Same.	*Rev.* much oxidized.	107·0	
48	Same.	Same.	*Rev.* a good deal oxidized.	110·2	

No.	Obverse.	Reverse.	Condition.	Weight (grs.).	No. of specs.
49	Similar.	Above barley-leaf, Pan, piping.	*Obv.* somewhat eroded; *rev.* fine. **Pl. V. 9.**	110·8	2
50	Same.	Same.	Somewhat eroded by acid.	100·7	
51	Similar; behind head, ΑΡ	Above barley-leaf, ΗΑ and krater.	Fair.	113·8	1
52	Similar, but apparently ΗΙ behind head.	Same.	Somewhat eroded.	118·0	1
53*	Similar.	Ram's head above barley-leaf, and ΗΑ	Fresh. **Pl. V. 10.**	117·3	1
54*	Similar.	Wing above barley-leaf; beneath, ΗΑ	Fresh, but *obv.* slightly eroded by acid. **Pl. V. 12.**	118·7	2
55	Same.	Same.	Surfaces injured.	115·5	
56	Similar, but ΔΙ behind head.	Above barley-leaf, cornucopiae with two ears of barley; beneath, ΦΙ. In lower field to l. ant.	Fresh.	118·0	8
57	Same.	Same.	Surfaces somewhat eaten by acid.	117·5	
58	Same.	Same.	do.	117·2	
59	Same.	Same.	Good.	117·0	
60	Same.	Same.	Fresh, but badly struck.	120·1	
61	Same.	Same.	do.	121·2	
62	Same.	Same.	do.	121·5	
63	Same.	Same.	Surface somewhat eaten.	114·1	

No.	Obverse.	Reverse.	Condition.	Weight (grs.).	No. of specs.
64*	Similar, but no inscription.	Pig above barley-leaf; beneath, ΦΙ	Fresh, but surface somewhat eaten. Pl. V. 13.	113·4	1
65	Similar.	Uncertain.	Worn.	117·5	1
66	Similar.	Uncertain.	Worn.	106·2	1

TARENTUM.

67*	Nikê seizing forelock and bridle of horse, whose rider is helmeted and holds javelin and small round shield.	Taras rising on dolphin with extended r. arm holding two javelins and small round shield on which appears the letter Ε. Waves beneath. In field l. ΙΟΡ. (*Horsemen*, vi. B. 2.)	Surface partially oxidized, otherwise good. Pl. VI. 14.	108·7	1
68	Two Dioskuri cantering l. In field above, ΜΙ. Beneath horse, ΣΑΛΩΝΟΣ	Taras holds two javelins and round shield with hippocamp badge. In field to l. ΓΥ. Waves below. (*Horsemen*, vii. D.)	Surface partly eaten away. Same condition as many of the Metapontine coins.	94·0	1
69	Boy rider crowning standing horse. In front, [ΦΙ]. Beneath, ΑΡΙΣΤΕΙΔ	Taras holds trident and ear of barley. In field r. ΗΡ (*Horsemen*, viii. L. 2.)	Similar condition to last. Pl. VI. 15.	91·5	1

HERAKLEIA.

No.	Obverse.	Reverse.	Condition.	Weight (grs.).	No. of specs.
70*	Head of Athena r. Skylla on helmet.	ΗΗΡΑΚΛΕΙΩΝ Heraklês standing facing, holding club and strung bow; lion's skin over l. arm. No signatures visible. (? Cp. B. M. Cat. 30.)	A good deal oxidized. Pl. VI. 16.	111·9	1
71	Three-quarters facing head of Athena with Skylla helmet; to l. ΑΡ ΙΓ	Same inscription. Heraklês with lion's skin and bow leaning on club; to r. ΛΕΩΝ	Fresh, but *obv.* badly struck. Pl. VI. 17 B.	117·6	2
72*	Same.	Same.	*Obv.* brilliant; surface of *rev.* eroded. Pl. VI. 17 A.	112·2	
73	Similar. Uncertain monogram r.	Similar. In field to l. ear of barley; to r. ΕΦΑΡ ΦΙ below to l.	Brilliant in parts. Pl. VI. 19.	116·0	2
74	Same.	Same.	Fine.	117·3	
75*	Similar, but under l. side crest of helmet [monogram]	Similar, but Heraklês crowned by flying Nikê. In field to r. ΦΙΛΩΝ	Good. Pl. VI. 18.	119·3	1
76*	Head of Athena r. in crested Corinthian helmet set back, its boss wreathed with olive. Behind, [monogram]	ΗΡΑΚΛΕΙΩΝ Heraklês standing, crowning himself, resting on club. In field to l. cornucopiae and ΑΡΧΙΑΣ Below, ΗΑ	Head somewhat eroded, otherwise brilliant. Pl. V 20 A.	113·1	2
77	Same.	Same.	*Obv.* brilliant; *rev.* eroded by cleaning.	111·5	

No.	Obverse.	Reverse.	Condition.	Weight (grs.).	No. of specs.
78*	Similar. Behind, ΝΙ	ΗΗΡΑΚΛΕΙΩΝ Heraklês, with cornucopiae, &c., on l. arm, holds handled vase above flaming altar. Inscr. l. ΕΦΣΩΔ ΑΜΟΣ	Brilliant. Pl. VI. 21.	118·0	2
79*	Same.	Same.	Brilliant.	119·2	
80*	Similar; head of Athena l. Helmet olive-crowned. Behind, ΦΙ	Same inscription. Heraklês with club, &c., on l. arm, holding out small handled vessel. To l. a small flying Nikê. Traces of inscr. below.	*Obv.* brilliant; part of field of *rev.* eroded. Pl. VI. 22.	115·8	3
81	Same.	Same; traces of inscription [ ]ΦΙ [ ]ΟΣ	*Obv.* a good deal eroded.	107·0	
82	Same.	Same.	Much oxidized.	117·9	

Total of Coins

Metapontum	66
Tarentum	3
Herakleia	13
	82

It will be seen that about four-fifths of the coins belonging to this hoard are of Metapontum. With the exception of the two Tarentine pieces, Nos. 67 and

68, all may be taken to represent the full "nomos" or didrachm weight of about 22 grains (1·425 grammes).

Of Metapontum the two earliest types here found are the much-worn specimens, Nos. 1 and 2, showing respectively a veiled and diademed head. The head represented by No. 1, upon other examples of which the inscription ΔΑΜΑΤΗΡ is visible, is adapted from the exquisite type on the Tarentine gold staters, variously interpreted as Hera, Aphroditê, or Demeter. In this case the goddess continues to wear the diaphanous veil on the back of her head, but the barley wreath here set in front of it as well as the inscription defines her character.

The earliest of the Tarentine prototypes went back, as I have elsewhere shown, to a date approaching 375 B.C.,[4] but they were revived at later epochs. A coin of the same type as No. 1, with the mouse symbol on the reverse, was in fact found in the Beneventan hoard,[5] which seems to have been deposited about 310 B.C. The Metapontine piece, No. 1 of the present hoard, which bears the signature ΑΠ, may be a somewhat late representative of the series.

A firmer chronological standpoint is afforded by the series of coins, Nos. 3–14, showing the bearded head of the hero Leukippos in a Corinthian helmet. The angle at which the helmet is tilted back, our best comparative clue on coins with this Corinthian feature, places this series somewhat later than those struck by the Syracusans at the time of Timoleon's expedition (344 B.C.). On the other hand, they appear slightly

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[4] "The Artistic Engravers of Terina," &c., *Num. Chron.*, 1913, p. 31 note.

[5] *Horsemen*, &c., p. 215, No. 21, and cf. p. 93.

earlier than the first types of Agathokles,[6] struck about 317 B.C.

These coins form a group by themselves in the Metapontine series, and their issue coincides with the adoption of a new monetary system, fitting in so far as the silver coinage was concerned with that of Thurii. It is characterized by the appearance of tetradrachms for the first and only time in the monetary history of Metapontum, and also by the issue of gold pieces with the same head of Leukippos, weighing 44 grains.[7] They show on the reverse two barley sprays, which might be taken to indicate that they were the doubles of the larger silver unit; in other words, gold octodrachms. This would involve a ratio of 11 : 1 in the comparative value of gold and silver; a proportion not impossible at this time.

The conformity with Thurian monetary usage, illustrated by the issue of tetradrachms, fits in well with a historic change effected at this epoch among the cities constituting the Italiote League. Shortly after his arrival in Italy in 334 B.C. the Molossian Alexander, anxious to eliminate as far as possible the Tarentine preponderance in their councils, transferred their meeting-place from Heraclea to a site now specially walled in for the purpose in the territory of Thurii.[8] The mark left by Alexander on the Magna-Graecian coinages, as I have elsewhere shown, was considerable, and his special *point d'appui* was Metapontum, which later on paid the last honours to his remains. His

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[6] *e. g.* Head, *Syracuse*, Pl. viii. 5, 6.

[7] Head, *Hist. Num.*, p. 78; *B. M. Guide*, Pl. xxiv. 14; and cf. Carelli, *Num. It. Vet.*, Pl. xlvi. 2.

[8] On the river Akalandros. Cf. Strabo vi. 3.

special badge was the thunderbolt of the Dodonaean Zeus. It is therefore a significant fact that on one of the earliest of the didrachms presenting the head of Leukippos, coupled, as on the tetradrachms, with the signature AMI, a thunderbolt is placed in the field.[9]

It is possible on all these grounds to assign the group of coins presenting the head of Leukippos with some confidence to the period immediately following the approximate date 330 B.C.

A further chronological standpoint is offered by the decidedly later variant of the same type [Pl. V. 5]. The helmet here set back on the head at a greater angle squares perfectly with the class of helmet worn by Athena on the later types of Agathokles' coinage.[10] Another approach to the Agathokleian type is seen in the addition of a crest. But a still more conclusive connexion is afforded by the triskelês symbol on the reverse, which was the special badge of the Syracusan tyrant. In a paper "On the Influence of Agathokles on the Coinage of Magna Graecia",[11] Mr. C. T. Seltman has already called attention to the historical importance of the triskelês on this piece as well as on a contemporary stater of Velia and a tetrobol of Terina. Already in 298 B.C. Agathokles had extended his power beyond the Ionian Sea and seized Corcyra. In 295 the capture by him of Krotôn gave him a dominating position in that part of Italy, which was backed up in the following year by his alliance with the Brettii. It is to this period that we may reasonably

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[9] The type is given by Garrucci, *Mon. dell' It. Ant.* II, Pl. ci. 31. No specimen of this coin occurred in the present find.

[10] *e.g.* Head, *Syracuse*, Pl. ix. 6, 7.

[11] *Num. Chron.*, Ser. IV, vol. xii (1912), pp. 1 seqq.

attribute the Metapontine type which seems to ascribe a certain overlordship to the Sicilian tyrant. The Metapontine type with the triskelês is very distinctly later than those presenting the head of Leukippos with the crestless helmet.

An entirely new didrachm type is supplied by No. 16 [Pl. V. 4], exhibiting on the obverse a bearded head of Heraklês with a club visible behind his neck. Unfortunately, owing to the erosion of the right part of the field of the reverse, it is impossible to say whether a symbol or signature existed there. The head is finely executed and in bold relief, and might from its style belong approximately to the same date as the earlier series showing the head of Leukippos. A small bronze piece in the Vienna Museum [12] represents a similar bearded and diademed head, presumably also of Heraklês, but without the club. The head of Heraklês in the lion's skin had appeared on earlier didrachms of Metapontum.[13]

By far the most numerous class of coin contained in the present hoard were the didrachms of Metapontum exhibiting on their obverse side the youthful head of the Corn Goddess with her hair falling down at the back of her head, and in many cases in front of her neck. Of this class there were forty-nine specimens—considerably over half of the hoard—and including twenty-three varieties. Owing to erosion by acid in the process of cleaning many coins that would other-

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[12] Cited and figured by Garrucci (or rather his editor), *Mon. dell' It. Ant.* II, Pl. cv. 6, who, however, mixes up silver and bronze types in the plate, under a wrong heading and with no indications in the text!

[13] *e.g.* Garrucci, Pl. civ. 10.

wise have been in good condition have a skinned appearance, which makes it sometimes difficult to judge of their relative date. It appears, however, that a fair proportion of these coins were in a fresh state. A closer examination reveals the fact that the coins of this class are susceptible of division into two main groups, one of which must be taken to have a chronological priority. The earlier group, whether the head is generally turned to the left or the right, is characterized by a small detail, taken over, as we shall see, from what seems to have been the prototype of the series. On all these, in addition to the hair of the Goddess falling down behind, a wisp of tresses is thrown forward in front of the neck.

At the head of this earlier group stands a very rare and beautiful type not represented in the present hoard, but of which an illustration is here given in **Pl. VI. i.** That the head on this coin, youthful as it appears, passed as the Mother Goddess, is shown by the inscription **ΔΑΜΑΤΗΡ** here inserted in front of the face, above her symbol, the cross-torch. Behind the head is the letter **Κ.** On the reverse, above the barley-leaf, appears a crab, and beneath it the inscription **ΑΡΧΙΓ.**[14]

This type is exceptional in several ways. No other coin of this class exhibits five letters of a magistrate's name. The crab symbol is, later on, specially associated with the Brettians, and on coins of Terina occurs as a Brettian badge. The youthful presentation of Demeter-Korê on the coins of Metapontum goes back to a work of the artistic engraver Aristoxenos, whose floruit

[14] It has been read **ΑΡΧΙΜ** and **ΑΡΧΙΝ**, but the final letter seems to me to be a **Γ**.

lies in the first quarter of the fourth century.[15] The first letters of his name **API** appear on the section of the Goddess's neck.[16] This type is reproduced in **Pl. VI.** ii from a specimen in my collection. In the head itself we may trace the influence of an exquisite tetradrachm type of Syracuse of the preceding age, in which the Corn Goddess is shown under the same youthful aspect with a single ear of barley bound in her hair, the sinuous tresses of which fall down the back of her neck.[17]

When after a long interval of time we see this youthful type of the Goddess revived on the Metapontine dies, it seems probable that we may again detect the influence of a Syracusan model, in this case much more widely circulated. This is the magnificent tetradrachm type exhibiting the head of Persephonê, and here clearly marked as her effigy by the inscription **ΚΟΡΑΣ**. The reverse of this piece already shows Agathokles' badge, the triskelês, but in place of a personal title the trophy here set up by Nikê is referred to in the legend as "Agathokleian". The types both of the obverse and reverse of this coin rank among the masterpieces of Sicilian medallic art, and the full youthful beauty of the Maiden on the obverse is in its own style

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[15] This may be gathered from the occurrence of a didrachm signed by this artist in fine condition in the Carosino Hoard deposited about 375 B.C. (see "Artistic Engravers of Terina", &c., *Num. Chron.*, 1912, p. 31 note). The coin in question was sold at the Sambon sale, Paris, 1905, lot 135.

[16] This signature was first detected and attributed to Aristoxenos by Raoul Rochette, who published two varieties of the coin in his epoch-making *Lettre à M. le Duc de Luynes sur les Graveurs des Monnaies Grecques* (Paris, 1831), Pl. iv. 34, 35.

[17] Head, *Coinage of Syracuse*, Pl. v. 4.

unsurpassed on any Greek coin-type. In this case, too, it may be noted that one of the most beautiful features is supplied by the curling tresses that sweep round in front of the neck. That it should have been imitated—in a more florid style it is true—at Metapontum at the time when the influence of Agathokles was growing in the West, is not surprising. The chronological indications do not at any rate conflict with this suggestion. The date of the Agathokleian piece is about 310 B.C. The later class of the Metapontine didrachms with the youthful Demeter type freshly struck when the present hoard was deposited, can be shown to belong to the first decennia of the third century.

The present hoard supplies us with the following symbols connected with the earlier group of didrachms presenting the youthful head of Demeter, with tresses in front as well as behind:

Caduceus
Winnowing fork
Tongs
Griffin
Artemis
Nikê
Plough
Star.

To these must be added the crab **Pl. VI. i** and the pyxis.[18] Diobols of this class occur with the plough symbol.[19]

The later group of the same class, Nos. 32–66, in

[18] Cf. Garrucci, *op. cit.*, ciii. 19.

[19] One in my collection weighs 19 grains. That in the British Museum, B. M. Cat. No. 159, weighs 19·1 grains.

which no tresses are visible in front of the neck, was more numerously represented in the hoard than the preceding. The coins, as already remarked, were evidently in a distinctly fresher state when deposited, and a certain proportion *à fleur de coin*. The following symbols appear on coins of this series:

Distaff
Cock
Thymiaterion
A single amphora
Two amphoras
Pan, piping
Krater
Ram's head
Wing
Cornucopiae.

It seems probable that the signature ΔΙ that occurs on several of these later types belongs to the same official who signs in a similar fashion behind the helmet of Leukippos on the coin presenting the triskelês badge of Agathokles on its reverse (No. 17), and ascribed above to about 295 B.C. or the years immediately succeeding that date. This indeed is rendered almost certain in the case of Nos. 56–63, where ΔΙ on the obverse is accompanied beneath the cornucopiae with two ears of barley, which form the symbol on the reverse, by the same signature ΦΙ that is seen below the triskelês on the other coin. ΦΙ is also coupled in the present series with the amphora types Nos. 44 and 45–8, and the pig, No. 64. ΔΙ on the obverse is elsewhere associated on the reverse with a thymiaterion, No. 39, and an amphora, No. 40, both coupled with the signature ΙΑ, which recurs in con-

nexion with the krater, No. 51, the ram's head of No. 53, and the wing of No. 54.

There is a distinct sign of decadence in the execution of the heads on some of these later examples, which, when compared with such fine work as is seen in **Pl. VI.** i, almost stand in the relation in which the Korê on Agathokles' African coinage stands to the original Syracusan issues.

Their condition shows, as already observed, that the coins of this latter class must be placed among the last issues represented in the present hoard. As to the date when the hoard was deposited, the presence of the two Tarentine *nomoi* of reduced weight, Nos. 68, 69—if, as seems probable from the state of their surface, they belong to the same lot—supplies some clear indications. No. 68, showing the two Dioskuri and the signature ΣΑΛΩΝΟΣ on the obverse, has been ascribed by me in my *Horsemen* to the period of the Pyrrhic hegemony, 281–272 B.C.,[20] when the reduction of the didrachm standard at Tarentum from *c.* 123–120 to *c.* 102–99 grains took place. No. 69, with the signature ΑΡΙΣΤΕΙΔ and Taras holding an ear of barley on the reverse, has been included in my Period VIII,[21] attributed to the time of the Roman Alliance, from 272 B.C. onwards, though from its appearance in the present hoard it might be preferably assigned to the preceding Pyrrhic period.[22] Its reverse type, indeed, places it in an exceptional category, since it

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[20] *Horsemen of Tarentum*, p. 159 (VII, D).

[21] *Ibid.*, p. 181 (VIII, L 2).

[22] It is also worth noting that the name ΔΑΜΟΚΡΙΤΟΣ, seen on No. 3 of this type, recurs in the form ΔΑΜΟΚΡΙ on a Pyrrhic type (Period VII, C 4).

seems to contain an allusion to the two closely associated cities of Metapontum and Herakleia. Taras here holds the ear of barley, which is the well-known Metapontine badge, while the large monogram to the left corresponds to that on the Herakleian coins.

As Metapontum took an active part in support of Pyrrhus, it is probable that the full-weight didrachm issues of this city were continued down to his date. But it is difficult to believe that they long survived the introduction of the reduced standard at Tarentum, which seems to date from his expedition. No Metapontine didrachms of this reduced weight appear to have been issued.

Twelve out of the thirteen Herakleian didrachms show signs of having been in very fresh condition at the time when they were first buried, and evidently belong to the same epoch as the latest class of the Metapontine coins. They belong, with the exception of the earlier type No. 10, to two main classes—those with the three-quarters facing head of Athena in a crested helmet, and those showing her head in profile, wearing a crested Corinthian helmet, olive-wreathed, and well set back.

Several signatures of magistrates or mint officials occur in the above series, some at least of which do not seem to have been hitherto recorded.[23]

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[23] These names appear neither in the B. M. Catalogue nor that of the Naples Museum, and are equally absent from the comprehensive works of Carelli and Garrucci.

	Obv.	*Rev.*
Nos. 7, 8	ΑΡ ΙΓ	ΛΕΩΝ
,, 73, 74	—	ΕΦΑΡ
,, 75	—	ΦΙΛΩΝ
,, 76, 77	—	ΑΡΧΙΑϹ ΙΑ
,, 78, 79	—	ΕΦϹΩΔ ΑΜΟϹ[24]
,, 80–2	ΦΙ	[ ]ΦΙ [ ]ΟϹ[25]

The full names of officials first appear at Tarentum in my Period VII, assigned to the years between the arrival of Kleonymos and Pyrrhus, 302–281 B.C. From that time onwards this practice is continued.

The types (Nos. 76–82) in which Athena's head turned either to right or left is covered with the crested Corinthian helmet bound with an olive-wreath are important as providing us with a solid chronological equation. Except that here Athena wears the helmet, the type entirely conforms to that of the Metapontine coin described above (No. 17), on the reverse of which appears the three-legged badge of Agathokles. This correspondence proclaims these Herakleian coins to be of contemporary date; in other words, they may be approximately referred to the years following 295 B.C. On the other hand, the absence of any Herakleian didrachms of reduced weight makes it difficult to bring down the latest

[24] A coin with this curious inscription from the McClean Collection was published by Mr. Grose, *Num. Chron.*, 1917, p. 174.

[25] Carelli (*N. I. V.*, Pl. cxli) publishes a similar piece with the inscription ΣΩϹΙ / ΒΙΟϹ, but the ΦΙ of the upper line seems to be clear on No. 81.

of these contained in the present hoard much beyond 280 B.C., the approximate date of the reduction of the standard in the neighbouring city of Tarentum.

It is to be noted that none of these coins belongs to the reduced standard of *c.* 98–102 grains.[26] The weights here recorded vary between 107 and 119·3 grains, and answer to the traditional scale.

On the other hand, no didrachms of the heavier class occurred in the "Calabrian" find described by me, in which thirteen Herakleian pieces, weighing 99–100 grains, were associated with the Tarentine.[27] The Calabrian hoard seems to have been deposited about the date of the Roman occupation of Tarentum in 272 B.C.

It will be seen that the new Magna-Graecian find supplies a valuable contribution to our knowledge of the types and chronology of a series of coins that have hitherto received little attention from numismatists.

ARTHUR J. EVANS.

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[26] It is a remarkable fact that not one of these Herakleian coins is included in the British Museum Catalogue.

[27] *Horsemen*, &c., pp. 216, 217, and see pp. 152 seqq.

VIII.

THE ROMAN MONETARY SYSTEM.[1]

PART I.

§ 1. *Origin of the System.*

THE Roman system of calculating monetary values dates from a period considerably anterior to that of the issue of the earliest Roman coins. Not until some years after the break up of the Latin League, when Rome was well on the high road towards gaining the supremacy over Italy, did she adopt a regular bronze coinage (*aes grave*) which was destined to form the basis of her monetary system while the Republic lasted, and with certain modifications and additions continued throughout imperial times.

It is now generally agreed that this initial step occurred about the year 335 B.C. But the institution of a coinage was a novelty only in so far as it dispensed with the use of weights and scales, and the sudden

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[1] I intended this paper originally to form an introduction to the article on the Augustan Sestertius by my respected friend, the late Canon Beanlands, although his conclusions differed somewhat from my own. But owing to his sudden death last September I was unable to ascertain his opinion with respect to it. I found, however, that a study of the Roman Monetary System could not stop at the reign of Augustus; consequently the treatment of the subject has developed into a far greater compass than I originally contemplated. Thus, my aim is to trace the growth of the Monetary System from its inception down to the final stage reached in the fourth century A.D.

appearance of a series of coins consisting of six clearly determined denominations suggests the pre-existence of a definite metric system.

The names borne by the different denominations point back, as Dr. Ridgeway has shown, to a more primitive order of things when metal was measured by length, and not by weight.[2] The terms *as* and *uncia* were originally linear measures corresponding with foot and inch; the Roman foot of 296 millimetres being subdivided into twelve *unciae*, or inches—a natural primitive arrangement common to most of the Greek, Italian, and Teutonic races. In corroboration of this the suggestion that the word *as* is derived from *asser*, a rod, and *uncia* from *unguis*, a (thumb) nail, is certainly both ingenious and interesting.

Further, the terms *Triens*, *Quadrans*, and *Sextans* mean literally not the third, fourth, or sixth part of anything, but that which divides the whole into three, four, or six parts, such as a cut or notch made across a bar of metal. Similarly, scruple (*scriptulum*, *scripulum*) denotes a little scratch, by which the inch (*uncia*) was divided into twenty-four parts, thus corresponding with the Greek γραμμή (a line).

§ 2. *The Bronze Coinage of Period I*, 335–286 B.C.

It has now been proved conclusively that Rome's earliest coinage (335 B.C.) was based on the standard of the Osco-Latin *libra*;[3] that is to say, the normal weight of the *as* was 273 grammes.

However, in Campania and other parts of Italy, there

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[2] W. Ridgeway, *Origin of Metallic Currency*, Camb., 1892, pp. 351 ff.
[3] Haeberlin, *Aes Grave*, p. 36.

existed a different measurement of the foot; consequently there was a different standard of pound. Thus, within a few years after the first issue of the *as libralis* at Rome, coins of a similar character were issued in other districts not infrequently based on different standards of weight. During the half-century that follows we find, as is only natural, a conflict of local weights and monetary systems until the coinage of Rome, either through the absorption or supersession of other systems, was able to develop from a local into a national coinage.

The denominations of the libral series are as follows:

As	= 12	unciae	= 273	grammes	= 4212·39	grains.
Semis	= 6	,,	= 136·5	,,	= 2106·19	,,
Triens	= 4	,,	= 91	,,	= 1404·13	,,
Quadrans	= 3	,,	= 68·25	,,	= 1053·10	,,
Sextans	= 2	,,	= 45·5	,,	= 702·06	,,
Uncia			= 22·75	,,	= 351·03	,,

(These weights are given by Dr. Haeberlin, but it may be pointed out that the great variation in the weights of the earlier cast pieces prevents their being assigned to anything more than an approximate standard.)

This system, though intelligible enough in itself and doubtless the outcome of long usage, nevertheless possessed certain obvious disadvantages. For example, the existence of a heavier pound of 327·45 grammes in the neighbouring district of Campania necessarily complicated interprovincial exchange; and the tendency on the part of the Roman coiners to diminish the weight of the coins must have caused further difficulties in this direction. This diminution of weight becomes specially noticeable after about the year 312 B.C., at which date the *uncia* disappears temporarily from the Roman system. The coins of 312 B.C. are distinguish-

able from those of the earliest period by the prow on the reverse being turned to the left. Their average weights are computed by Haeberlin thus: *As*, 258 grammes; *Semis*, 125·8; *Triens*, 83·45; *Quadrans*, 62·87; *Sextans*, 41·91.

The metal of which these coins are composed is copper alloyed with lead and tin in about the following proportions: copper 68 %, tin 8 %, lead 24 %.[4] This compound, yellow in appearance and of remarkable durability, may be correctly designated *bronze*, as distinguished from pure, or almost pure, copper, which does not appear to have been employed by the Roman mint until a much later period. Yellow bronze, externally indistinguishable from *orichalcum*, may be regarded as the traditional metal of Rome, and was used as the standard for reckoning money values down to the end of the Republican period.

§ 3. *The Relative Value of Silver and Bronze during Period I.*

Since somewhat divergent theories have been advanced as to the value of the *aes grave* relative to silver the question calls for some consideration in detail.

At the time of the introduction of the libral *as* no silver coins were actually struck in Central Italy except in the district of Etruria, although within a few years (*circa* 330 B.C.) *didrachms* were issued in Campania. There can be little doubt, however, that the silver of

[4] J. Hammer, in *Zeitschrift für Numismatik*, 1907–8, p. 127, gives copper 67·98 %, tin 7·33 %, lead 23·56 %. However, analysis shows that there is a good deal of variation in the composition of the metal.

Southern Italy and Sicily obtained currency in Latium and Campania, and was commonly used for reckoning large sums of money and also for international commerce.

The silver coins of Etruria date from some period anterior to 350 B.C., and fall into two series, which appear to have been used contemporaneously, although probably not in the same towns.

(*a*) Coins based on the Euboic-Syracusan standard:

Denomination.	*Mark of value.*	*Normal weight.*
10 *units*	X	135 *grains.*
5 ,,	Λ	67·5 ,,
$2\frac{1}{2}$,,	III	33·75 ,,
1 *unit*	I	13·5 (= *litra*).

(*b*) Coins based on the two scruple standard:

Denomination.	*Mark of value.*	*Normal weight.*
5 *units*	Λ	175·0 *grains.*
$2\frac{1}{2}$,,	—	87·5 ,,
1 *unit*	—	35·12 (= 2 *scripula*).

It will be seen that the largest coin of group (*a*) corresponds in weight with the widely circulated Corinthian *stater*, and that the smallest, or unit, is identical with the Sicilian *litra*, which exchanged for $\frac{1}{5}$ of the Attic *drachma*.

Dr. Ridgeway maintains that the Roman *as libralis* was equal in value to the Etruscan silver unit of 13·5 grains, and consequently weighed the same as the bronze equivalent of the Sicilian *litra*. In support of this he urges that Greek writers translate the word *libra* as λίτρα. We may hesitate, however, to accept this conclusion. In the first place, while it is impossible to discover the exact weight of the Sicilian bronze *litra*,

the coins make it quite evident that by the year 335 B.C. it had fallen considerably below the weight of a Roman *libra* (273 grammes). Secondly, an equation between the Roman *as libralis* and the silver *litra* involves the extraordinary ratio between silver and bronze of over 300 to 1.

The same writer urges elsewhere that as the *scripulum* (scruple) of silver was equivalent to a pound of bronze, and as the *libra* contained 288 *scripula*, therefore the ratio between the metals was 288 to 1.[5]

Here, again, the statement cannot pass unchallenged. It is clear that by the year 286 B.C. the pound of bronze was equal in value to two *scripula* (*vid. infra*), which gives the ratio between silver and bronze as 120 to 1. These appear, moreover, to have been everywhere the accepted relative values of the two metals, and, although not impossible, it is very unlikely that within the space of fifty years so radical a change could have taken place as that indicated by the drop from 288 to 120.

Assuming then that in 335 B.C. the *as libralis* was equal to two silver *scripula*, we see that it would have been interchanged exactly for the Etruscan silver unit of group (*b*), which weighed two *scripula*, and almost exactly for the coin of group (*a*) with mark of value ΛII.

There is, however, a remarkable feature to be noticed in connexion with these two groups of Etruscan coins, inasmuch as at some date subsequent to 350 B.C. the values of the coins were doubled, i.e. their weights were reduced by a half.

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[5] It may be pointed out, however, that the libral *as* weighed not 288 but 240 *scripula*.

Thus we find coins corresponding to those of group (*a*) with their values changed as follows:

Denomination.	*Mark of value.*	*Normal weight.*
20 *units*	XX	135·0 *grains.*
10 ,,	X	67·5 ,,
5 ,,	Λ	33·75 ,,
$2\frac{1}{2}$,,	ΛII	16·8 ,,
1 *unit*	—	6·75 ,,

Similarly coins corresponding with group (*b*), based on the one scruple unit (17·5 grs.):

Denomination.	*Mark of value.*	*Normal weight.*
20 *units*	XX	350·0 *grains.*
10 ,,	X	175·0 ,,
5 ,,	Λ	87·5 ,,

This sudden halving of the weights can only imply one thing, namely, that a corresponding reduction was made in the weight of the bronze money of Central Italy. This is exactly what took place in the year 286 B.C., when the libral *as* was superseded by the semi-libral.

It is important to notice in connexion with these Etruscan silver coins that the weight of the denomination in the first group, marked ΛII, is practically identical with that of the unit of the second group, *i.e.* one scruple, which is the weight of the silver *sestertius* introduced at Rome in 268 B.C.

The Campanian *didrachm* weighed originally seven scruples, and was consequently equal approximately to $3\frac{1}{3}$ libral *asses*, or 10 *asses* to 3 *didrachms*.

After the year 312 B.C. the weight of the *didrachm* fell to six scruples, when the simpler relation of 3 *asses* to 1 *didrachm* was obtained.

§ 4. *Period II*, 286–268 B.C.

The first of a series of reforms of the bronze coinage took place about the year 286 B.C., and is known as the semi-libral reduction. The coins were reduced to about half their original weight, the *uncia* reappeared, and two smaller denominations, the *semuncia* and *quartuncia*, were added to the series. Henceforth the smaller pieces from the *sextans* downwards were struck instead of cast.

The normal weights of the various denominations are estimated as follows:

As	=	136·5	grms.	=	2106·19	grs.	=	120 scripula.
Semis	=	81·6	,,	=	1259·0	,,	=	72 ,,
Triens	=	54·5	,,	=	842·0	,,	=	48 ,,
Quadrans	=	40·8	,,	=	629·5	,,	=	36 ,,
Sextans	=	27·25	,,	=	421·0	,,	=	24 ,,
Uncia	=	13·6	,,	=	210·5	,,	=	12 ,,
Semuncia	=	6·82	,,	=	105·25	,,	=	6 ,,
Quartuncia	=	3·41	,,	=	52·6	,,	=	3 ,,

Some writers have assumed that the semi-libral *as* was issued on the Neo-Roman standard, *i. e.* 163·725 grammes. However, that this is not the case seems to have been proved by Dr. Haeberlin's analysis deduced from the weight of actual specimens.

In one point only I venture to differ from Dr. Haeberlin's conclusions. He gives the normal weight of the semi-libral *semis* as 68·22 grammes, or half that of the *as*, whereas there seems good reason to believe that it weighed normally 81·6 grammes, or six times that of the *uncia*. That is to say, the *as* is the only piece in which the Osco-Latin standard was retained.

The result of weighing specimens certainly goes to confirm this, and on referring to Dr. Haeberlin's list[6] it

[6] Haeberlin, *Aes Grave*, p. 105.

will be seen that the average weight, in all cases with the exception of the *semis*, falls somewhat below the normal. Specimens of the *semis*, however, range from 89·5 to 61·6 grammes, giving as the average weight 72·82 grammes; and since it may be taken as a general rule that the normal weight approaches more nearly to the maximum than the minimum, and is almost invariably in excess of the average, it is reasonable to infer that the normal weight of the *semis* is certainly greater than 68·22 grammes, and should in all probability be fixed at 81·6 grammes.

In the third column of weights I have given the equivalents in *scripula*, which is more compatible with the Roman method of reckoning than our modern grammes or grains inasmuch as the *scripulum* was a Roman weight. Also the adoption of this standard enables us more readily to appreciate the value of the bronze in relation to silver.

It will be seen that, although the relative values of the coins remained unchanged, their weight introduced a decimal as well as a duodecimal principle. That is to say, the *uncia* was issued at $\frac{1}{10}$ the weight of the *as*, and the denominations from the *semis* to the *sextans* were not fractions of the *as* but multiples of the *uncia*.

This readjustment of weights was in reality an interesting compromise between the two prevailing metric standards of Central Italy, arrived at, obviously, in order to harmonize the bronze coinage of Rome with that of her near neighbours. The *as*, reduced to 136·5 grammes, still retained the Osco-Latin standard of the previous period, whereas the denominations from the *semis* downwards were based on the standard

of the heavy pound (327·45 grammes = 288 *scripula*), henceforth known as the Neo-Roman.

The reason for the semi-libral reduction is not difficult to discover. We may dismiss the theory, formerly held by numismatists, that it was an expedient resorted to in consequence of state bankruptcy. Indeed, it is unnecessary to connect it with any internal financial crisis. Quite adequate explanation lies in the fact that the semi-libral reduction enormously facilitated interprovincial and international commerce, and from this point of view it may be regarded as not merely a useful but a perfectly logical reform.

The adoption of a decimal weight system brought the Roman coinage into a more exact relation with the coinages of Campania and Etruria. In Campania the scruple of silver was equivalent to ten bronze *libellae*. Thus the semi-libral *as* was now made equal to the silver *scripulum*, on the ratio of 120 to 1,[7] while the *uncia*, *sextans*, *quadrans*, and *triens* were respectively equal to 1, 2, 3, and 4 *libellae*.[8]

We pointed out above that in the reduced silver coins of Etruria the lowest denomination of group (*a*) bearing the mark of value ΛII, and the unit of group (*b*), were almost of equal weight, *i.e.* one *scripulum*. Thus they would each be equivalent to the semi-libral *as* of bronze.

It may be noted in passing that since it is clear that in 286 B.C. the Roman *as* of 136·5 grammes was equal to the Etruscan coin marked ΛII, it is reasonable to conclude that in 335 B.C. the same denominational

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[7] Scruple or *scripulum* = 1·137 grammes (17·5 grains). Thus 1·137 × 120 = 136·5.

[8] Hill, *Historical Roman Coins*, p. 22.

values corresponded when both coins were twice as heavy.

Although important results were undoubtedly secured by the semi-libral reform, the evidence of the coins shows that it was short-lived in consequence of two serious defects that militated against its efficient working as a monetary system.

(1) Since it involved a compromise between two weight standards, the Osco-Latin and the Neo-Roman, the strict relation between the *as* and its fractions was obscured. Thus, for example, two *semisses*, or three *trientes*, were intrinsically of more value than an *as*.

(2) It may be laid down as a general principle that a monometallic currency is only practical for international exchange when the metal adopted is of a precious nature, *e.g.* gold, silver, or electrum. Since Rome had hitherto clung to her bronze coinage exclusively, it followed as a natural result that in foreign commerce her own coins tended to pass at a discount; and, further, without some balancing factor such as gold or silver, it was practically impossible to maintain the value of her bronze money at home.

It may be conjectured too that in the manufacture of coins the advantages of striking instead of casting were becoming increasingly patent to the Roman mind; hence the tendency to reduce the clumsy fabric of the *aes grave* to a more convenient form.

During the eighteen years that followed the institution of the semi-libral standard the Roman coinage passed through successive stages of transition, more or less chaotic, in which the only constant factor is the tendency towards reducing the weight of the coins.

Such terms as *triental* or *quadrantal* reduction,

occasionally used to describe the coinage of this period, are purely arbitrary, and there appears to have been no official recognition of any standard other than the semi-libral, although the weight of the *as* was subject to considerable variation, and specimens frequently weigh no more than a libral *triens*, *quadrans*, or even *sextans*.

It is to this period that the multiples of the *as*, namely, the *decussis*, *tressis*, and *dupondius*, are assigned.

§ 5. *Period III*, 268–217 B.C. *The Sextantal Reform.*

By far the most important reform made in the earlier Roman coinage is that known as the sextantal reduction. It is not without significance that Pliny makes no mention of any change in the coinage before this date, which he enables us to fix in the year 268 B.C.[9]

The confusion of the preceding decade now gave place to an ordered and intelligible monetary system, established not only in Rome and the surrounding districts but in all parts of the world where the power of Rome made itself felt.

The reform comprised two main features. (1) The weight of the *as* was reduced to $\frac{1}{6}$ of a pound (Neo-Roman), and of the lesser denominations in proportion; all the bronze coins being struck instead of cast. (2) The silver currency was inaugurated.

(1) The normal weights of the sextantal bronze are:

As	= 54·5	grammes	= 842·0	grains	= 48	scripula.
Semis	= 27·25	,,	= 421·0	,,	= 24	,,
Triens	= 18·16	,,	= 280·7	,,	= 16	,,
Quadrans	= 13·6	,,	= 210·5	,,	= 12	,,
Sextans	= 9·08	,,	= 140·3	,,	= 8	,,
Uncia	= 4·5	,,	= 70·15	,,	= 4	,,

[9] Pliny, *N. H.* xxxiii. 3, 13; also cf. Hill, *op. cit.*, p. 28 f. Cf. *Zeit. für Num.* xxvi, p. 238.

We are probably right in assuming that this standard received some sort of official recognition in 269–268 B.C., and it is certain that for a period of about half a century it was adhered to approximately. But, as is well known, Roman bronze coins down to the middle of the third century A.D. present a bewildering variation in the matter of weight; so that, during this period of over five hundred years, it may be regarded as an axiom that, although certain weight standards were adopted nominally, in actual practice only a mere approximation was aimed at.

Two explanations may be given for this. (1) The bronze was simply token money bearing either its mark of value or some distinctive type whereby its exchange value was guaranteed. Thus precision of weight became relatively unimportant. (2) The method employed in the manufacture of bronze coins rendered the attaining of accuracy in weight very difficult. That is to say, the flans or blanks, before being struck, were cast in moulds, and any inaccuracy or shifting of one half of the mould would naturally produce an unequal thickness in the casting or a badly formed edge, both of which features are often observed in actual specimens, and produce variation in the weight of the coins.

Although the bronze coins of 268 B.C. were smaller and lighter than those of the preceding period, the relation of silver to bronze was still maintained at the ratio of 120 to 1. This was effected by the introduction of a silver currency as a balancing force.

(2) The advent of the *denarius* together with its fractions, the *quinarius* and *sestertius*, may be regarded as the really monumental achievement of the reform

of 268 B.C. The *denarius* assimilated the existing silver standards of the Greek world and in course of time superseded them. In spite of the fact that bronze was, and continued to be, the standard by which values were reckoned, for the space of five hundred years the *denarius* forms the link of continuity in the monetary system of Rome.

The weights of the silver coins, as originally issued, are:

Den.	= 10 ass.	[X]	= 4·55 grms.	= 70·0 grs.	= 4 scrip.
Quin.	= 5 ,,	[V]	= 2·275 ,,	= 35·0 ,,	= 2 ,,
Ses.	= $2\frac{1}{2}$,,	[IIS]	= 1·137 ,,	= 17·5 ,,	= 1 ,,

The ratio of silver to bronze may be expressed thus:

$$\frac{\overset{\text{Grammes.}}{54{\cdot}5 \times 10}}{4{\cdot}55} = 120 \text{ or } \frac{\overset{\text{Scripula.}}{48 \times 10}}{4} = 120.$$

The basis of the Roman coin weights from this time onwards appears to be the *scripulum* or scruple.

With the introduction of the Roman *denarius* the silver coinage of Etruria and Campania ceased. But it will be seen that the new Roman silver coins almost exactly correspond in weight with the reduced Etruscan coins bearing the value marks X, Λ, and ΛII, and also that the Campanian *quadrigatus* of the period *circa* 290–268 B.C., weighing six *scripula*, is equal to a *denarius* and a half.[10] Further, the weight of the *denarius* is practically identical with that of the Attic *drachma*.

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[10] A further link between the coinages of Rome and the local mints is seen in the *Victoriatus*, which was originally half the value of the *Quadrigatus* (*i. e.* $\frac{3}{4}$ of a *denarius*), but was ultimately reduced to the value of a *quinarius*.

Thus the existing monetary systems were united in the Roman silver coinage of 268 B.C.

§ 6. *Period IV*, 217–88 B.C. *The Uncial Reduction.*

The next change to be noticed occurred in the year 217 B.C., when the weight of the *as* was reduced to an *uncia*. Pliny states that "when Hannibal was pressing the Romans hard, in the dictatorship of Q. Fabius Maximus, the *as* was made uncial, and it was decided that the *denarius* should exchange for 16 *asses*, the *quinarius* for 8, and the *sestertius* for 4. Thus the State made a gain of a half; but, in paying military wages, 1 *denarius* was always given for 10 *asses*."[11]

Mr. Hill's lucid comments on the monetary change of 217 B.C., and the causes that brought it about, leave little to be added to the question.[12] One point, however, seems to require some further elucidation, namely, the exact extent to which the weights of the silver coins were reduced. It has been stated that the *denarius*, which previous to the year 217 B.C. had weighed 4·55 grammes (4 scruples), henceforth weighed about 3·90 grammes ($3\frac{1}{3}$ scruples) or $\frac{1}{84}$ instead of $\frac{1}{72}$ of a pound.

Although this statement is approximately correct, it seems worth while to point out that the exact equivalent of $3\frac{1}{3}$ scruples is 3·756 grammes (= 58·3 grains), and not 3·90 grammes (= 60·18 grains). If, therefore, the *denarius* was issued at the rate of eighty-four to the pound, its normal weight cannot be expressed simply in scruples, since $\frac{1}{84}$ of a pound (3·90 grammes) falls midway between $3\frac{1}{3}$ and $3\frac{1}{2}$ scruples, or to be exact, $3\frac{3}{7}$.

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[11] Pliny, *N. H.* xxxiii. 45.

[12] Hill, *op. cit.*, p. 47 f.

At this point we are led naturally to inquire which of these two methods of reckoning coin weights was generally employed by the Romans. That is to say, whether each separate coin conformed to a fixed standard, or whether the coins were struck at the rate of so many to the pound.

The former method would naturally result in a comparative uniformity in the weight of coins issued during the continuance of a particular standard, whereas the latter might be expected to lead to considerable variation, since, provided the requisite number of coins per pound was turned out, the weight of individual coins was a minor consideration.

Now, both these results are very clearly observed in Roman coins. From 217 B.C. to the time of Augustus the weight of the *denarius* remains remarkably steady, while the bronze coins exhibit extraordinary variation. Hence it would appear that the silver coins were weighed individually, probably according to a scrupular standard, and the bronze, although of nominally fixed weight, were, in actual practice, calculated at a given number to the pound.

Resuming our consideration of the weight standard adopted for the silver coinage of 217 B.C., it is quite certain that the *denarius* had fallen considerably below its original weight of four *scripula*. The result of weighing specimens is practically conclusive in showing (1) that the weight of the *denarius* fell several years before 217 B.C., and (2) that from this date onwards its normal weight was $3\frac{1}{2}$ *scripula* (= 61·39 grs.).

Republican *denarii* in good, though not unusually fine, condition give the following average weights:

Before 217 B.C. from 79·9–60 grains.						
B.C.	217–104	[19 coins]	av. wt.	59·5	grains.	
,,	104–89	[18 ,,]	,, ,,	60·2	,,	
,,	89–64	[19 ,,]	,, ,,	60·1	,,	
,,	64–49	[21 ,,]	,, ,,	60·5	,,	

Allowing a slight percentage for depreciation of weight caused by wear, a fair estimate of the normal weight would therefore be at least 61 grains.

The monetary system as revised in 217 B.C. may be tabulated thus:

Denarius	= 16 asses	=	61·3 grains	=	$3\frac{1}{2}$ scripula.	
Quinarius	= 8 ,,	=	30·6 ,,	=	$1\frac{3}{4}$,,	
Sestertius	= 4 ,,	=	15·2 ,,	=	$\frac{7}{8}$,,	
	As	=	421·0 ,,	=	24 ,,	

and fractions of the *as* in proportion;
the ratio of silver to bronze being as 110 : 1.

§ 7. *Period V*, 88–82 B.C. *The Semuncial Reduction.*

The final stage in the diminution of the *as* under the Republic was reached in 89–88 B.C., when, according to the provisions of the *Lex Papiria*, its weight was reduced to half an ounce (210·5 grains or 13·64 grammes) and its fractional denominations in proportion. Mommsen has shown that in taking this step Rome merely brought her bronze standard into line with that which had been adopted for some time previously by many Italian cities where the right of coinage still lingered.[13] Rome was thus enabled to suppress the local coinages and substitute her own in the allied cities.

By this reduction the relation of silver to bronze was changed to the ratio of 55 to 1.

[13] Cf. Hill, *op. cit.*, p. 90.

Within a decade of the semuncial reduction the regular issue of bronze coins from the Roman mint ceased until the reorganization of the coinage by Augustus between the years 20 and 15 B.C. During this period of sixty years the only coin issued regularly was the *denarius*. The gold and lesser silver pieces only occur sporadically and in comparatively small quantities.

§ 8. *Bronze Coins issued between* 46 *and* 20 B.C.[14]

During this period there occur certain collateral issues of bronze coins, which lead up more or less directly to the imperial system ultimately established by Augustus; and, owing to the wideness of their circulation, these coins must have gone some way towards filling the gap caused by the absence of a regular bronze currency in the capital itself.

They may be grouped as follows:

(1) Coins of Cn. and Sextus Pompey. 46–44 B.C.

(2) Coins of the moneyers C. Clovius and Q. Oppius. 45–44 B.C.

(3) Gallic issues of Lugdunum and Vienna. 40–*circ.* 29 B.C.

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[14] In the course of this section frequent reference will be made to an important article by Mr. Grueber, published in the *Numismatic Chronicle*, 1904, on "The Roman Bronze Coinage, 45-3 B.C." Mr. Grueber has here amassed much useful information respecting the coinage of this period generally, and in particular has thrown great light on the question of the composition of the coins, ascertained by analysis of the metal. There are, however, certain points on which I find it impossible to accept Mr. Grueber's conclusions; notably his view as to the value of copper relative to bronze or orichalcum, and his determination of the particular standard, either semuncial or quartuncial, in force during the period. I shall endeavour to deal at length with these and kindred questions as they arise.

(4) Coins of M. Antonius. 39–35 B.C.
(5) Coins struck in Asia Minor. 29–20 B.C.
(6) Coins of P. Carisius (Spain). 23–22 B.C.

(1) The bronze coins of the Pompeys are uniform in type, viz. *obv.* Janiform head; *rev.* prow of ship, with three varieties of legend:

(*a*) *Rev.*—CN·MAG IMP (weights, 451, 296 grains).

(*b*) *Rev.*—MAGN PIVS IMP (weights, 404, 480 (?), 347, 322, 298, 263, 259, 223, 341, 274, 246 grains).

(*c*) *Obv.*—MAGNVS . PIVS·IMP·F *Rev.*—EPPIVS LEG (weights, 375, 270·5, 207·5, 199, 190·5 grs.).

The coins of group (*a*) have on the obverse the mark of value I, thereby leaving no doubt as to their denomination. "These coins", says Mr. Grueber,[15] "were issued by Cn. Pompey during his campaign in Spain, 46–45 B.C. They were probably struck in the province of Baetica, a region specially rich in copper, the most famous mines being at Cotinae in the Sierra Morena. . . . They are of the *uncial* standard, a standard which had long been superseded at Rome by a *semuncial* one under the provisions of the *Lex Papiria*, 89 B.C. The plentiful supply of metal in the above-mentioned districts may have been the cause of so little care being exercised in adjusting the coin to the right standard. In adopting the old type of the *as*, however, the current value of the piece became at once apparent."

The coins of groups (*b*) and (*c*) were struck by Sex. Pompey and his legate, Eppius, in 45–44 B.C., and appear to conform to the same standard as those of

[15] *Coins of the Roman Republic*, iii, and *Num. Chron.*, 1904, p. 220.

Cnaeus. Although they are without marks of value the greater variation in their weight suggests that they fall into at least three denominations. The analysis of the metal of which they are composed shows 71 % copper, 9·7 % tin, and 19·3 % lead.[16]

Mommsen maintains that none of the coins were struck actually during the life of Cn. Pompey, the Great, but were issued by his younger son, Sextus, since Pompey the Great never placed his praenomen on the coins. To assign the coins of group (*a*) to a date anterior to the passing of the *Lex Papiria* (*vide* Cohen and Babelon) on account of their *uncial* weight is historically impossible.

It may be doubted, however, whether so large an issue of coins can be restricted to a single place of mintage (Baetica), and to so short a period as that assigned by Mr. Grueber.

The coins are by no means uniform in style or fabric. Those of group (*a*) are generally flat and coarsely executed, while those of group (*b*) are thick, compact, and usually in fairly good style. Clearly the coins obtained a very wide circulation, and we know, for example, that they were current in Southern Gaul.[17]

The adoption of the *uncial* standard, although in itself a retrogressive step, may possibly have been an attempt on the part of Pompey to resuscitate the dignified proportions of the older Roman bronze and to arrest the dwindling tendency of which the *Lex Papiria* was the last authoritative expression.

(2) In 45–44 B.C. an attempt was made by the

[16] *Num. Chron.*, 1904, pp. 220–4.
[17] *Num. Chron.*, 1917, p. 61.

moneyers C. Clovius and Q. Oppius to revive the bronze coinage at Rome.[18] The attempt, however, was not successful, although there arise in connexion with it several interesting points, which foreshadow the greater monetary reform that was carried out twenty-five years later.

The coins may be described thus:

C. Clovius. 45 B.C.

Obv.—Bust of Victory r., draped; her hair drawn to the back of her head, and tied with a band; before, CAESAR·DIC·TER.

Rev.—Minerva standing l.; she carries a trophy over her r. shoulder, and oval shield on l. arm; in front, a serpent erect. C·CLOVI·PRAEF.

(Wts. 268, 236, 231, 226, 212 grains.)

Q. Oppius. 44 B.C.

Obv.—Head of Venus r., diademed; her hair collected into a knot, and falling in locks down her neck; behind, a capricorn.

Rev.—Victory walking l. and looking back; she bears a palm-branch in r., and a dish with fruit in l.; before, Q·OPPIVS·PR.

(Wts. 197, 178, 171 grains.)

(Babelon mentions a variety with head of Venus l. Cf. ii, p. 277, No. 2.)

Mr. Grueber ascribes to a third moneyer, L. Plancus, a coin with *obv.* similar to that of Clovius and *rev.* a sacrificial jug. It has been shown since, however, that the coin is undoubtedly false.

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[18] *Num. Chron.*, 1904, p. 235. These coins have been variously assigned to Spain, Gaul, or Sicily (cf. Bab., ii, p. 276). Rome is however, their probable place of mintage.

The coins of these two moneyers are closely related as regards style and date, and are, moreover, component factors of a somewhat novel monetary system. Their chief interest lies in the fact that in them we see the inception of a principle that was entirely new to the Roman coinage.

The coins of the moneyer Clovius are composed of yellow bronze. Those of Q. Oppius, on the other hand, are decidedly lighter and are struck in almost pure copper, this being the first instance of the use of the unalloyed metal by the Roman mint. Yellow bronze, like orichalcum, was considered more valuable than copper; the ratio between the metals being, as we shall see, about as $1\frac{2}{3}$ is to 1.

The two moneyers of 45–44 B.C. seem to have adopted this principle as the basis of their system. Thus, we find, Clovius struck *dupondii* of yellow bronze and Oppius struck *asses*, not of the same metal but of its equivalent in copper. Theoretically, then, the *as* of Q. Oppius should be $1\frac{2}{3}$ times the weight of half a *dupondius*. Taking the average weight of the *dupondius* as 231·4 grs. (shown by the coins of Clovius), the *as* of yellow bronze would weigh 115·7 grs., which multiplied by $1\frac{2}{3}$ gives 192·7 as its equivalent value of copper. This weight corresponds pretty closely with the actual weights of the coins of Oppius given above.

It seems probable that, in spite of the fact that in 88 B.C. the *as* had been authoritatively fixed at half an ounce, its dwindling tendency had not really been arrested; indeed, it is practically certain that by the year 35 B.C. it had fallen to about a quarter of an ounce. This is evident from the bronze coinage of M. Antonius (*vid. infra* (4)).

Whether the *as* had fallen quite as low as a quarter of an ounce in the years 45–44 B.C. may be questioned. There is no doubt, however, that the *dupondii* of Clovius and the *asses* of Q. Oppius fall considerably below the semuncial standard, to which Mr. Grueber maintains that they belong.

This attempt to inaugurate a bimetallic system of bronze and copper on the ratio of $1\frac{2}{3}$ to 1, although supremely interesting in itself, appears to have met with small success. Nevertheless it foreshadows the principle which was to become, within thirty years, the very essence of the imperial bronze coinage.

(3) The bronze coins of Lugdunum and Vienna (Gaul)[19] fall into two groups:

(*a*) Coins with the heads of Caesar and Octavius back to back, and *rev.* a ship's prow with the legend **COPIA** (Lugdunum), or **C·I·V** (Colonia Julia Vienna)—average weight 350 grs. These coins may probably be assigned to the years 40–38 B.C. In style and fabric they are allied to the bronze struck by Sextus Pompey, and, like them, may perhaps be regarded as *asses*. However, at a period when the standard of the bronze *as* had not only been officially reduced to half an ounce, but, as a matter of fact, appears to have fallen even lower, we may be cautious in adopting the hypothesis that in certain districts of Spain and Gaul a return was made to a standard that had been superseded elsewhere for half a century.

(*b*) Coins of flatter style and low relief with head of Octavius on obverse and head of Caesar on reverse (Coh. 3)—weights, 408, 360·4, 282, 265, 250, 128·5 grs.;

[19] For a fuller account of this series see "The Mint of Lugdunum", *Num. Chron.*, 1917.

or with *rev.* DIVOSIVLIVS within laurel-wreath (Coh. 95, 96)—weights, 384, 373·5, 359, 352, 333, 316·5, 301, 300, 292, 253·5, 211, 209, 207, 256·5, 211 grs. These coins may be assigned to the period 38–*circ.* 29 B.C. Mr. Grueber suggests that they are probably of four denominations, viz. *sestertius* (approx. 400 grs.), *tripondius* (330 grs.), *dupondius* (250 grs.), and *as* (130 grs.). If this suggestion is correct the existence of an uncial standard in Gaul, 40–38 B.C., becomes even harder to explain, since the coins of group (*b*) belong approximately to a quarter-ounce standard. It is certainly unlikely that coins ranging in weight from 200 to upwards of 400 grains are all of the same denomination. At the same time the coins bear no marks of value or any distinguishing types whereby their denominations may be determined. In size and general appearance a coin of 330 grs. differs but little from one of 250 grs., and in actual practice it would have been extremely difficult to distinguish a *tripondius* from a *dupondius* without resorting to weights and scales. Further, the list given above shows so many intermediate weights that it is quite impossible, in the majority of cases, to say to what denomination a particular specimen belongs.

(4) The series of bronze coins of M. Antonius struck in the East 39–35 B.C., which is fully described by Mr. Grueber, marks a new departure from the coinage hitherto issued by the Romans.[20]

The coins bear the names of four of Antony's officers who appear to have held the position of moneyers: (1) L. Atratinus, who was *praefectus classis* in 38 B.C.

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[20] *Num. Chron.*, 1904, p. 192 f.

and consul in 34 B.C.; (2) L. Bibulus, stepson of M. Junius Brutus, whose party he joined after the murder of Caesar, but surrendered to Antony after the battle of Philippi and became *praetor designatus* probably of Syria; (3) M. Oppius Capito, whose identity is uncertain; and (4) C. Fonteius Capito, who was *consul suffectus* in 33 B.C.

For our present consideration the most important feature to be noticed is that the coins fall into six denominations each bearing its mark of value: Δ (*sestertius* = 4 *asses*; sometimes in conjunction with the formula IIS); Γ (*tripondius* = 3 *asses*); B (*dupondius* = 2 *asses*); A (*as*); S (*semis*); •• (*sextans*). Moreover, in addition to its mark of value, each denomination has its distinctive type. Thus, on the *sestertius* we have the heads of Antony and Octavia facing each other, with the reverse type, a quadriga of hippocamps; on the *tripondius*, or *tressis*, the jugate heads of Antony and Octavius facing that of Octavia, with *rev.* three sailing galleys in line; on the *dupondius*, the heads of Antony and Octavia facing each other, with *rev.* two sailing galleys; on the *as*, the jugate heads of Antony and Octavia, with *rev.* one sailing galley; on the *semis*, the head of Antony only, with *rev.* a galley without sail; and on the *sextans*, a janiform head, with *rev.* prow of galley.

In the matter of weight the coins exhibit considerable variation. The moneyers L. Atratinus and M. Oppius Capito seem to have struck coins on two weight standards; this however may be merely the result of accident, and it seems probable that since the coins bore clear indications of their current value very little attention was paid to their actual weight.

However, from the lengthy tabulation of weights compiled by M. Bahrfeldt,[21] it would appear that a definite standard was adopted as the basis of the system, although in practice it was only adhered to approximately.

	Average wts. (Bahrfeldt).	Average wts. (Grueber).	Normal wts. on quartuncial basis.
Sestertius	385 grs.	410–310 grs.	421 grs.
Tripondius	325 ,,	350–300 ,,	315·75 ,,
Dupondius	250 ,,	300–215 ,,	210·5 ,,
As	128 ,,	145–120 ,,	105·25 ,,
Semis (?)	65·5 ,,	105–50 ,,	52·6 ,,

"Reckoning the Roman pound at 5,040 grs.," says Mr. Grueber, "these weights would show a quarter-ounce standard; but if it be taken into consideration that the coins are not of pure copper, for the analysis of the metal shows it to be of 76·5 per cent. copper, 14·0 tin, and 8·3 lead, we have a mixed-metal coinage which, as in the case of that of orichalcum, in circulation was rated at a higher value than one of pure copper. Allowance being made for the irregularity of the weights, arising from carelessness in the casting of the flans, it would appear that it was intended that these coins should be issued on the half-ounce standard, such as was introduced into the Roman system in 88 B.C."[22]

The view stated in the last sentence is, I venture to think, quite untenable. The misstatement has frequently been made that bronze, or orichalcum, was *twice* as valuable as copper. But, as was suggested in the previous section, the ratio between bronze and

[21] M. Bahrfeldt, "Die Münzen der Flottenpräfekten des Marcus Antonius", in *Num. Zeit.*, 1905, pp. 9–56.

[22] *Num. Chron.*, 1904, p. 213.

copper appears to have been about $1\frac{2}{3}$ to 1. It is therefore quite inaccurate to use the terms "quartuncial standard of bronze" or "semuncial of copper" as if they were convertible.

The metal of which Antony's coins are composed is practically identical with that of the Roman *as*. This compound, referred to as "bronze", and not pure copper, was the standard on which coin weights were estimated from the year 335 B.C. down to the time of Augustus. The semuncial *as* of 88 B.C. was, therefore, half an ounce of bronze. It is pretty certain that the constantly diminishing tendency of the *as* continued after 88 B.C., and that by the year 35 B.C. it had probably fallen to about $\frac{1}{4}$ ounce. The standard of Antony's coins, therefore, can *only* be described correctly as "quartuncial".

(5) A series of bronze coins bearing on the obverse the bare head of Augustus, and on the reverse a laurel wreath encircling either the letters **CA** (*Commune Asiae* (?)) or the word **AVGVSTVS**, has been assigned by Mr. Grueber to Asia Minor, 29–20 B.C. He points out that the main interest in these coins arises from the fact that an analysis of the metal in which they are struck shows 78·7 % copper, 0·7 % lead, and 20·6 % zinc. This is very nearly the composition of the metal used a few years later for the earliest bronze *sestertii* and *dupondii* issued at Rome; and is in fact the *orichalcum*, or golden bronze, of which so many ancient writers speak.[23]

The coins consist of four denominations, viz. *sestertius* (394–301 grs.), *dupondius* (237–159 grs.), *as* (143–121 grs.), and *semis* (*circ.* 67 grs.). In spite of the

[23] Grueber, *op. cit.*, pp. 213 and 244.

variation in the weight of individual specimens these figures indicate pretty clearly a quartuncial standard of orichalcum.

(6) The coins of P. Carisius struck at Emerita in Spain (23 B.C.) are copper *asses*, examples of which give the following weights: 176, 174·4, 166·2, 164·5, 156, 137, 144·5, 152·2, 192 grs. We see then that their standard is not, as Mr. Grueber maintains, semuncial of copper, which would give a normal weight of 210·5 grs., but quartuncial of bronze (105·25 grs.) struck in its copper equivalent at a ratio of 1 to $1\frac{2}{3}$, giving the normal weight as 175·42 grs.

§ 9. *The Augustan Reform.*

From the foregoing survey of the bronze coins issued between the years 46 and 20 B.C. we see into how chaotic a state the currency had fallen. However, the six groups of coins just considered may be regarded as so many experiments providing the material from which Augustus succeeded in devising an intelligible system destined, in its essential features, to remain practically unchanged for two and a half centuries.

Thus, he adopted and made permanent the quartuncial standard, and upon it based a system, modified somewhat from that of Antony, consisting of *sestertius*, *dupondius*, *as*, and a small coin generally considered a *quadrans*. The two higher denominations had not previously been issued at the Roman mint, although they had already made their appearance in Gaul, Asia Minor, and the East. The metal, *orichalcum*, in which the new *sestertii* and *dupondii* were struck, was similar to that which had been introduced in the CA coins mentioned above. This compound of copper and zinc

henceforth takes the place of the traditional yellow bronze, *i. e.* copper alloyed with lead and tin. It does not appear that this newer metal was considered more valuable than the yellow bronze previously used, from which it was in its general appearance practically indistinguishable. Both metals were rated higher than pure copper at about the proportion of $1\frac{2}{3}$ to 1. So that the adoption of orichalcum by Augustus was probably due to the fact that it possessed greater durability, and was more easily fused.

The *as* and *quadrans* were of almost pure copper, and, like the coins of Q. Oppius and P. Carisius, were struck at $1\frac{2}{3}$ the weight of their theoretical bronze equivalents. We see therefore the introduction of the bimetallic principle into the Roman system.[24]

The reason for introducing copper, instead of issuing all the denominations in bronze or orichalcum, is not difficult to guess. In all his projects Augustus thought and acted "imperially". In many of the Greek-speaking parts of the Empire and in Spain, copper had become the medium for small change. The yellow bronze of Rome, being intrinsically of greater value, was not always readily interchanged with provincial copper; hence the obvious advantage of issuing the *as*, or unit of the Roman system, in copper, which in no degree complicated the money matters of the Roman, but enormously facilitated those of the provincial.

The date of the reform is given by Dr. Willers as

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[24] Canon Beanlands has worked out an interesting and ingenious theory with respect to the adoption of the bimetallic system of bronze and copper. See his paper on the "Origin of the Augustan Sestertius", pp. 187 ff. of this volume.

23 B.C., by Sig. Laffranchi as 19 B.C.,[25] and by Mr. Grueber as 15 B.C. Possibly Dr. Willers' date is to be preferred, although, as far as our present study is concerned, the precise date is unimportant compared with the far-reaching results of a reform which may justly be said to constitute the turning-point in the history of the Roman coinage.

The denominations and normal weights of the reformed bronze system are:

Sestertius	= 421 grs.	= 27·25 grs.	= 24 scripula
Dupondius	= 210·5 ,,	= 13·6 ,,	= 12 ,,
As	= 175 ,,	= 11·3 ,,	= 10 ,,
Quadrans (?)	= 44 ,,	= 2·9 ,,	= $2\frac{1}{2}$,,

It is generally agreed that the *sestertius* was issued at one ounce (421 grs.), and the *dupondius* at half an ounce, although the latter shows considerable irregularity of weight.

The question of the weight of the *as* relative to that of the *dupondius* has been misunderstood by many writers, and consequently requires some further consideration. Mr. Grueber states, "It is clear from the evidence of these two coins (viz. *as* and *dupondius*) that in currency *orichalcum* was rated at nearly double the value of copper, and as the *as* weighed about 220 grains, the standard was semuncial, the same as was introduced in 88 B.C., so that in this respect there was no change".[26]

The three statements here made are obviously intimately connected together. But the evidence on which Mr. Grueber relies, namely, that derived from

[25] Willers, *Geschichte der Römischen Kupferprägung*, quoted by Laffranchi, *Riv. it.*, 1914, vol. xxvii, pp. 325–7.

[26] *Op. cit.*, p. 241.

the coins themselves, does not, I venture to maintain, corroborate the conclusions at which he has arrived.

(1) Fifty-six *asses* in good condition, struck by the moneyers of Augustus, give an average weight of 168·7 grs., and only in very exceptional cases is an example of the *as* found to approach as much as 200 grs.; 220 grs. appears, therefore, a disproportionately high estimate. Continuing this investigation from the Augustan down to the end of the Flavian period a similar result is obtained. Thus by weighing several hundreds of *asses*, struck between 17 B.C. and A.D. 96, we have conclusive evidence to show that during the first century of the Empire the normal weight of the *as* remained practically fixed, and that it was certainly considerably less than 200 grs. We cannot, therefore, regard it as being based on a semuncial standard.

(2) Since the *sestertius* was fixed at the normal weight of one ounce of *orichalcum* (421 grs.) it follows that the *as* would be worth 105·25 grs. of the same metal, of which the copper equivalent would be 175·5 grs., and this closely corresponds with the average weight as stated above.

(3) It is evident, moreover, that between 88 B.C. and 20 B.C. the normal weight of the *as* had fallen from $\frac{1}{2}$ to $\frac{1}{4}$ ounce.

I have so far referred to the smallest coin of the series as a *quadrans*, since it is so designated by Mr. Grueber.[27] It is evident from its metal and weight that it cannot be a *semis*; which was the view formerly held by numismatists. But the question has

[27] *Num. Chron.*, 1904, p. 241.

been raised whether this little copper coin was intended to pass for a *quadrans* or a *triens*. Since the coins bear no marks of value we have only the consideration of weight to guide us; and this, particularly in the case of bronze and copper coins, only warrants deduction on somewhat broad lines.

The result of weighing eighteen well-preserved examples of these coins gives an average of 47·6 grs., which is rather above a quarter of the normal weight of the *as* (*i. e.* 43·9 grs.); and, since it may be taken as an axiom that the nominal weight is invariably greater than the average, we should naturally expect to find the nominal weight of these coins appreciably higher than 47·6 grs.

Theoretically a *triens*, or third of an *as*, should weigh 58·5 grs., and allowing for depreciation in weight through wear, which is generally greater in the case of copper coins, it seems by no means improbable that the average of 47·6 grs. implies a nominal weight of 58·5 grs.

Of the eighteen coins examined many specimens were found to weigh over 52 grs., and some as much as 57·8 grs.

Since, however, there appears to be no outside evidence for the existence of a *triens* under Augustus, and the mere variation in the weight of the coins counts for little, it is reasonable to regard these small copper pieces as *quadrantes*.

E. A. SYDENHAM.

(*To be continued.*)

IX.

THE ORIGIN OF THE AUGUSTAN SESTERTIUS AN EXPERIMENT IN TRIMETALLISM.[1]

MUCH has been written already upon the subject of the Brass Coinage of Imperial Rome, and many theories have been advanced as to the proportions of the metals composing it and the reasons for its adoption. The great variation in the weight of existing specimens has naturally complicated the matter, and many numismatists appear to have despaired of a correct solution in consequence of the uncertainty thus introduced. I hope, therefore, that I shall not be thought presumptuous in proposing one which I believe has not hitherto received recognition.

The main questions which I have set myself to answer are these: Why was a new coinage initiated by Augustus about the year 15 B.C.? Why did that coinage assume the form which is familiar to us in the imperial series? What difficulties were in the way of

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[1] The late Canon Beanlands, at the time of his death, had practically completed, and arrangements had been made for him to read to the Royal Numismatic Society, the paper which is here printed. The manuscript was entrusted by the family to the Rev. E. A. Sydenham, who has kindly undertaken to revise it for publication. In view of the highly technical nature of the metallurgical problems concerned, it has also been thought advisable to submit the paper to an acknowledged authority, Dr. S. W. Smith, of the Royal Mint, whose observations have been incorporated in foot-notes signed with his initials. Our thanks are due to both these gentlemen for their assistance.—EDD.

carrying out the system which was then adopted, and how far can we trace the operation of those difficulties in modifying results? Why do we find a steady and incessant deterioration in the standards originally chosen? And finally, Why did the system break down and come to be ultimately abandoned about the close of the third century?

The answers to these questions are, I believe, not to be found expressed consecutively in any printed publication: in some cases, indeed, they have not been attempted, and in others a solution has been offered quite different from what I propose.

It is not improbable that the project of establishing a common coinage throughout the Roman dominions occurred to the fertile mind of Julius Caesar; in fact we may be justified even in saying that it must have occurred. It is possible that in the brass pieces of Clovius and copper of Oppius this idea began to take practical shape, and that here we have for the first time an attempt at launching on the Roman public a brass *dupondius* and copper *as* on something like the estimated basis subsequently adopted by Augustus:[2] but I will refer to this hereafter. At any rate, that Julius Caesar was interested in the collecting of gems has been recorded by Suetonius,[3] and these coins with their evident striving after Greek models, issued by his lieutenants, must, one would think, have been produced under his direction. Was the sanction he obtained from the Senate to put his own portrait on the coins part of this scheme? and are the somewhat contemptuous allusions to the small value of orichalcum by Cicero (*de Off.* III. 23) covert references to a project

[2] Cf. the preceding paper.

[3] Suet. *I. Caes.* 47.

which in more ways than one was distasteful to the leaders of the old Senatorial party?

But setting aside conjecture let us proceed to facts. Whatever may have been in the mind of the Dictator, it was put an end to by his death, and for many years his successors were restrained from attempting to meddle with the existing conditions of things, although their wholesale adoption of the privilege of representing themselves upon the silver coins affords striking testimony to the little regard which was paid to this practice in itself so long as it did not involve something more. The extreme inconvenience to which the people must have been put by the abeyance of the functions of the mint as regards small change, the chaotic condition which for so long must have maintained where the ever-decreasing stock of bronze currency was never being replenished—these are in themselves evidence that authority shrank from encountering opposing influences in settling a question that involved something far more important than providing Roman shopkeepers with the means of serving their poorer customers.

What were the reasons that induced the authorities of the Roman mint to accept proposals for a reform of the bronze currency so drastic and novel as that which they adopted?

They were twofold: the urgency of some method for arresting the depreciation of the value of the *as*; and the need for extending the range of what had been previously a merely local currency into one of universal acceptation throughout the Empire.

As regards the former, it is hardly necessary to elaborate a theme so well known. Whereas the libral

as, partly on account of its extreme inconvenience and partly owing to successive endeavours on the side of the authorities to make as much profit as possible out of the coinage, had shrunk by rapid stages into the semuncial, which represented roughly a 50 to 1 ratio between bronze and silver, in other countries the ratio even in currency was something like 120 to 1, and the actual commercial value of the metals seems to have been about 250 to 1.

Now although it is conceivable that the Roman bronze coins which came into circulation in foreign markets may have been accepted at the value of local bronze of similar size and weight, it is clear that even on that basis much loss would result, and much dissatisfaction arise, especially among the lower wage-earners, to whom a circulation of low value currency was of most concern. Particularly would this condition press with severity upon the troops in occupation of conquered territory. Their pay was small, and the silver *denarii* in which it was usually made would soon be exchanged into small coin.

As regards the second consideration, the need for the introduction of an imperial bronze currency; it was clearly of great importance that this should be effected. Not only was it an essential feature of that imperial centralization so dear to the heart of Augustus, but it promised an enormously increased profit to the mint, and by supplanting the innumerable local issues it would facilitate the reduction of standards to a common measure, with a corresponding facility for adjusting prices and for estimating taxable commodities.

It is not disputable that if the Emperor had chosen

to adopt monometallism on a silver basis, and to relegate bronze to a mere token currency, the difficulty might have been surmounted; but there were reasons why such a policy would have proved extremely unpopular. No doubt a great deal of profit was extracted by the bankers and tax-collectors from the uncertainties of exchange values; these classes would be hostile to any alteration of the currency which threatened to deprive them of great opportunities for gain; and the Roman people, to whom the ancient bronze standard still meant so much, by tradition and association with the past glories of the Republic, would be hardly likely to tolerate a measure which would sweep away one of the last vestiges of their earlier prerogatives.

An escape from such a predicament was effected by a reform based, as I believe, on the principles which I shall endeavour to explain in the course of this paper.

The principle has been emphasized by authorities on political economy that among the prime requisites for a circulating medium of exchange are comparative but not too great rarity, uselessness, and portability. With none of these requirements does copper, or bronze—as an alloy of copper and tin—comply.

It is not rare enough to be reasonably precious; it is not useless, but of the greatest service in the daily life of man, and at an earlier stage of civilization pre-eminently the metal of utility in war and peace: it is not portable in quantity commensurate with its exchange value, as one would imagine many a Roman matron must have found who went a-marketing with libral *asses* in her basket. Now just at the time when things were at their worst there was a metallic

substance brought to the notice of Augustus, or his immediate predecessors, that combined in an extraordinary degree those qualities in which copper was lacking.[4] It was an unknown substance, the true composition of which was to remain unknown for many centuries to come; it was a substance outside the ordinary requirements of the market, for the many uses to which it is now put were not so much as dreamed of; it was sufficiently scarce to be within the possibility of being monopolized by a State which, like the Roman Empire, had a far-reaching control over accessible regions. It could, moreover, be combined with copper so as greatly to appreciate its value and correspondingly decrease its weight as a coin: the combination, indeed, was so intimate that it was believed at the time to be merely a particularly rare variety of the copper itself.

Added to all this, it had that other great qualification for a precious thing, attractiveness, for though it only existed alone as an inconspicuous mineral deposit it invested with a golden charm the copper with which it was associated.

This property of calamine seems to have been either

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[4] Orichalcum (i.e. copper alloyed with zinc) appears to occur in the first instance in the coins of Augustus (with *rev.* CA within wreath), possibly struck in Asia Minor about 29 B.C. In the preceding paper on the "Roman Monetary System" I have pointed out that this new substance did not differ perceptibly in appearance from the yellow bronze (copper alloyed with lead and tin) which had been the traditional metal of the Roman coinage under the Republic, nor apparently was it rated at a higher value, as may be inferred from the coin weights. Coins of pure copper were, as has been shown, quite as great a novelty as those of orichalcum. The Augustan scheme was an adaptation of existing elements rather than the introduction of new ones into the Roman system.—E. A. S.

unknown or little heeded until close on the Christian era. Aristotle speaks of a Mossynoecian earth which, found in the region of Pontus, had the property of colouring copper much brighter and whiter than other alloys, but seems to have regarded it as more a curiosity than an article of much use or value. The name is of uncertain derivation, but seems most probably a corrupt Latin derivative from καδμεία. Pliny prefers the latter term, which he uses exclusively of the extract when, in speaking of the superior excellence of the Livian copper ore, he says, "Cadmiam maxime sorbet": it especially assimilates the cadmia.

He calls the calamine ore "lapis aerosus celebris trans maria et quondam in Campania nunc in Bergomatium agro, extrema parte Italiae: feruntque nuper etiam in Germania provincia repertum" (*Nat. Hist.*, lib. xxxiv, cap. 1).[5] The careful enumeration of these past and present sources of supply is suggestive of the comparative rarity of the mineral.

Calamine, as is well enough known now, is a silicious carbonate of zinc, but the zinc was never extracted from it in a metallic state, nor was it for many centuries that it was discovered as such, and even for long after its rank as a metal was disputed.

I have recapitulated these well-known facts in its history only to remind you of the peculiar position it occupied in Roman metallurgy, which indeed has a

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[5] The text is corrupt. Canon Beanlands adopted the reading *lapis cerosus celebritas in Asia*, which will hardly construe. The MSS. have *celibritas mariam* (or *in aria*), according to Detlefsen, who reads as in the text.

The latest research on *cadmia* is summarized by Blümner in his article *Galmei*, in Pauly-Wissowa, *Real-Encycl.* vii. 687 f.—G. F. H.

very direct bearing on the whole subject of its employment in the currency. Now the suggestion made by those responsible for introducing it to the notice of the Emperor or his advisers was clearly this. Suppose that the value of cadmia can be so adjusted with relation to copper as to give a fixed ratio between them on the one hand, and again with silver so as to establish a given ratio on the other, the copper or bronze coin will be stabilized in its relationship to silver by the intervening medium: the superior bronze formed by the union of copper and cadmia, easily recognized by its colour, will be worth so many times the ordinary variety, and exchangeable on that basis: it in turn will command a definite exchange with the denarius of silver, and a free and fixed interchange between the three coined metals will be maintained. Now it is evident that in carrying out such a scheme the most important point would be the control of the calamine market, and of this I have shown there is every reason to believe the imperial power could assure itself. Even if we suppose, and there are really no very substantial grounds for the supposition, that statues of orichalcum were sometimes cast, they cannot have been sufficiently numerous to have created a commercial demand for the substance in anything like a proportion large enough to compete with the demand created by the coinage:[6] whereas the latter would be quite sufficient to absorb the probable supply, and the Government could commandeer all the known deposits for its own purposes. Even the best copper-mines

[6] Probably many things besides coins were made of orichalcum, *e.g.* swords, spear-heads, knives, ornaments, &c.—E. A. S.

were probably in the same category, and yet, as will appear, there is good reason to believe that those most suitable for producing a good orichalcum smelting ore proved inadequate to the enormous demands made upon them. And here it will be well further to emphasize the metallurgical difficulty of the process of which there exist so many signs in the result. To combine in just proportions two metals which are assimilable in any proportion, and of which the one is existing in an ore in unknown quantity, must have always been a difficult operation, and this was increased by circumstances of which the smelters had no knowledge.

Although the atomic weights of copper and zinc are much closer than those of most metals (63 to 65), and quite near enough to justify the belief that they were identical, there is nevertheless enough difference to create an element of error which would in itself hamper all accurate calculation. After obtaining oxides of the metals by calcination, and mixing them in what seemed due proportions, though the smelting proceeded without hitch the resultant alloy would not represent the same proportion. But there were many other considerations than this: the volatilization of zinc occurs at a far lower temperature than copper, and it is probable that there would be a considerable and inexplicable loss from this cause in many a smelting; while the presence of refractory impurities in the copper ores would frequently prevent—as Pliny seems to suggest—the absorption of the cadmia in the proportion which the mixing was estimated to produce. I believe these causes alone are sufficient to account for the very large percentage of error, above and below the standard

adopted, which it was found necessary to permit in the actual weights of the coin. This percentage seems to have been as high as 10 % (and the constituent proportions appear to have varied as greatly) in the *dupondii* and *sestertii*; the weights of the *as* are far more constant, and for that reason they afford a far safer guide to arriving at a correct conclusion as to what the standard really was.

And now let us ask if it be possible to arrive at such a conclusion.

Here I should like to put in a plea for a method of procedure which seems to have been very generally ignored. When attempting to discover the ratio of coin weights ought not a unit to be employed which was known to those people who were adopting such a ratio?

It is usual to present in grains and fractions of grains, or in grammes with a long tail of decimals, the weight of our specimens, and there are many occasions on which these microscopic divisions are of real value. On the other hand, it must surely be remembered that the mind of the Roman was unconcerned with fractions of grains or grammes, and that he could not possibly have constructed a scale of multiples based on these as units. Now if it can be shown that an intelligible and coherent scheme may be found with a real Roman unit underlying it, is it not reasonable for me to invite acceptance for this scheme, and only to reduce its elements into grains or grammes for the sake of comparison with other systems?

Hitherto the size and weight of the denarius seem to have been chiefly governed by the consideration of how many could be got out of a pound of silver.

It had first been introduced at 72 to the pound: that proportion had fallen, according to the well-known preference of the Romans for a duodecimal system, to 84 to the pound, which works out at about 60 grains apiece. In practice, however, during the Triumviral period, the weight of the denarius had hovered between 53 and 63 grains, and there is evidence in existing specimens that between these wide limits it was very much left to the caprice or greed of the moneyers as to what it should be. Now there were reasons why the *denarius* of Augustus's new coinage should be far more definitely established than this. It has sometimes been assumed that in its initiation it was a tentative scheme proceeding on no very definite scale of weights. I cannot accept any such assumption. In political economy new theories always begin on theoretically definite lines; it is only when in practice modifications are found necessary to cope with circumstances which have not been foreseen, or to provide for gains which have not at first been contemplated, that the original theory is departed from, and obscured under variations that make for vagueness. There was in this case a reason, not only for a very definite establishment of the weight of the *denarius*, but for a relative ratio to be laid down between that weight and the weight of the bronze coinage. Previously no such ratio had been counted on: the bronze *as* had been allowed to follow its own course of depreciation independently of what happened to the silver. Now the unit of Roman weight seems to have been the siliqua, a convenient enough little measure which by multiples of 12 proceeded through a graded scale up to the libra of 1,728 siliquae. (It is represented as equal to 2·9244 grains.)

I maintain that there is overwhelming evidence for believing that the Augustan *denarius* was fixed at the weight of 20 siliquae: this works out in grains at 58½, which I think all who have weighed their specimens will admit is a very fair average for these coins, coins it may be noted of a finer and more constant size than any other *denarii* in the whole range of the imperial series.[7]

Having decided upon a theoretical weight for the *denarius*—86·4 to the pound—the next point to be determined was a fixed weight as between this and the *as*.[8]

It must have struck students of the Roman imperial coinage that average *asses* weighed very closely three average *denarii*. I believe that this coincidence was designed by the framers of the new system, and that its true purport is evidently manifest. Three *denarii* at 58½ grains give the resultant as a weight of 175½ grains, or 60 siliquae.

Now at 60 siliquae the *as*, which was the sixteenth of a *denarius* in value, establishes a ratio as between copper and silver of 48 to 1, a fixed proportion which was essential to be maintained in the coined money, and which indeed it was the object of the whole

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[7] 58½ grs. is too low an estimate for the normal weight of the Augustan *denarius*. By weighing seventeen fine examples (struck between 20 B.C. and A.D. 14), the average is shown to be 59·8 grs., which clearly indicates a normal weight of something over 60 grs. The standard of the *denarius* under Augustus appears to have been 3½ *scripula*, i. e. 61·39 grs.—E. A. S.

[8] It may be worth pointing out that from about 15 B.C. to 37 A.D. the silver was issued by the Imperial mint of Lugdunum and the bronze by the Senatorial mint of Rome. Probably, however, a weight standard was mutually adopted by the two mints.—E. A. S.

scheme to maintain. Again we recognize in these figures the marked preference for a duodecimal system of weights and values.

Then, as to the *dupondius*.

The Roman *flatores* had found that calamine in order to produce the most satisfactory orichalcum result should be combined with copper in the proportion of 1 to 4, i. e. 20 %. If, therefore, they made a *dupondius* of this proportion they would have a coin of equal values of copper and calamine, four parts of which should be of the former and one of the latter, and just twice the worth of the *as*, while it was $\frac{1}{5}$ heavier.[9]

Now let us see how this works out. One-fifth of 60 is twelve: the *dupondius* would therefore weigh 72 siliquae (in grains 210·4).

Can one doubt but that this was the intended weight of the *dupondius*?

Again, the *sestertius* equalling two *dupondii* in weight and value would scale 144 siliquae or 421 grains (one ounce). But while it was worth four *asses* it

[9] The assumption that the Romans deliberately fixed the relation of zinc to copper at 4 to 1 in value is, however, open to question. In the absence of any methods of assay or analysis or even the knowledge that the brass derived its properties from the presence of a distinct metallic element, they could hardly have had any grounds on which to base this relationship. A far more likely explanation is that they were guided entirely by the *colour* of the final product, and that the particular colour they were aiming at happens to belong to the alloy with about 20 % of zinc. The "calamine-brass" processes in later times produced much paler alloys than the 20 % zinc, i. e. they contained more zinc than this. If this was arranged for by the Roman smelters it would have enabled them to produce very closely the particular colour they desired merely by the addition of more or less copper. As a matter of fact it is extremely unlikely that the brass was produced *directly* from a mixture of the two ores, but far more probably by smelting the calamine with metallic copper.—S. W. S.

would weigh almost (6 sil. short) $2\frac{1}{2}$, restoring the significance of its ancient name, no mean consideration when seeking to stabilize and popularize this new relation of the metals.

And thus we get round to the *uncia* for the weight of the *sestertius*, which multiplying by 12 gives us 1,728 siliquae to the libra from whence we had started.

Here is a scheme which would logically fulfil all the conditions imposed upon the framers of it. Proportions of value and weight would be established theoretically perfect as sustaining a definite relationship between copper and silver through the medium of orichalcum. The separation of this latter alloy into its component parts would be impossible; a reasonable value for it would be maintained; its supply was under Government control.

It will be noted that the *dupondius* is really the keystone of the system: a coin of double the value of the *as*, containing equal values of each metal.

Some twenty-five years ago, when the falling ratio of silver to gold was a burning question in the United States and other silver-producing countries, I advocated a plan for creating a more stable exchange as between the gold creditor and silver debtor nations. It was that a universal dollar of exchange should be agreed upon and issued under the joint authority of all those countries which could be persuaded to adopt it. This dollar should be in electrum, an equal value of gold and silver at a ratio corresponding with the commercial value of the metals as then averaging—about 16 to 1. It was to be accepted in all payments, and should be allowed to form bank reserves instead of gold coin. Any variation between the current values of the two

metals within reasonably anticipated limits would balance, for as the value of the one element might depreciate so would that of the other proportionately appreciate, nor would there be any temptation to smelt out the coins into their constituent parts in order to extract the more precious element.[10] Now *mutatis mutandis* the Roman mint was doing something very like this. Although the balance would not really be self-adjusted as between silver and copper, and the commercial value of the latter was too small in proportion to its value in the *as* to be appreciated up to that point, on the other hand, the power of the central authority was sufficient to guarantee circulation in the markets of the world, and the orichalcum coinage could not be broken up. In practice there is every reason to believe that it proved a workable system, notwithstanding the difficulties to which I have referred.

There is no evidence that it met with disfavour on its introduction or that it proved a source of commercial dislocation. Up to the time of its abolition orichalcum seems to have been an object of pride and admiration to the Roman people, and the art which was lavished upon the production of this coinage must have greatly contributed to the esteem in which the material was held.

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[10] This suggestion could have had no economic value since it is tantamount to compelling every one who takes 1,000 oz. of gold to accept with it 16,000 oz. of silver. A much closer analogy to the introduction of brass coinage by the Romans would have been the modern substitution of the so-called 'Nickel' coins (75 % copper and 25 % nickel) for the heavier bronze coins in countries other than this—i. e. making a small coin do the work of a larger one merely because of its resemblance to silver.—S. W. S.

Had the governing power refrained from the deterioration of the *denarius* there is little reason to doubt that orichalcum would have continued, so long as the supply of the ore lasted, to fulfil the purpose for which it had been devised.

But with the degradation of the silver, its constant diminution and adulteration, there could come no appreciation of its fractional currency in bronze. Step by step that was involved in the ruin of the more precious coin until a point was reached when it became no longer profitable to make an orichalcum *sestertius*, to be perforce exchanged at 4 to 1 with a tin-washed *denarius*. One may judge from the inflated language of Procopius how relatively precious the brass had become in the days of Justinian; long before then it had vanished from the imperial coinage, and no other method had been invented to bolster the currency of a dishonest and bankrupt State.[11]

Further Notes on the Metallurgy.

Strabo describes how the zinc formed on the interior of the furnace, and actually appeared in the metallic form in drops as "false silver" as well as in the oxide "pompholyx" used for eye-disease: *zinc ointment.* (See also Pliny, xxxiv. 10. 23.) This shows the large element of loss in the operation, which must be accounted for in the proportion between the metals (Cu and Zn) in the actual analysis.

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[11] The fact that the later brass coins contained diminishing quantities of zinc might have been due to the melting up of older brass coins in making the newer issues long after the deliberate production of "orichalcum" had ceased.—S. W. S.

The latest and best analyses of bronzes and brasses are given by Hammer, *Zeitschrift für Num.*, xxvi. 1–144, Berlin, 1908. They are very important and wholly confirmatory.

Incidentally Hammer points to the deduction that Augustus brass yields 15 % of zinc or thereabouts, Caligula and Claudius 20 % over, Nero 18 %, Vespasian and Titus 16 %, Domitian and Trajan 11½ %, &c., on a descending scale; Antoninus Pius 8¼ %, Marcus Aurelius 6½ %, Commodus 6 %, later Emperors 5–7 % to Philip, when it dwindles to practically nil.

This shows I think that in the Augustan furnaces there was a greater loss, 5 % owing to the less perfect method employed (5 % is a relatively small quantity considering the nature of the operation, and would mean about 20 grains in the sestertius).

Then in the time of Caligula and Claudius the maximum was reached owing to improved method; probably due to the smelting with the copper *metal* instead of the *oxide*. Thus the ideal 4 to 1 of the orichalcum *mixture* would be attained.

The scarcity of the zinc owing to the exhaustion of supplies is well indicated by the gradual tailing off of the percentages.

The Relationship of the Metals.

They were (1) Copper.
(2) Tin.
(3) Lead.
(4) Zinc.

(1) Copper was the groundwork of all.

(2) Tin by immemorial usage had proved to be an improvement of the quality of the metal, giving

increased durability, toughness, and temper, though the last advantage was chiefly attained through *tempering*.

(3) Lead was an adulteration, probably added at the last to the molten mass to make up *loss in weight*.

(4) Zinc was employed to give the characteristic colouring, and was believed to be a specially fine variety of copper.

Metallurgically:

(1) was chiefly obtained from the oxide: for the sulphides of copper were much more difficult to treat.

(2) Tin was imported in the metallic form, and smelted in proportion of *weights* with the copper after the latter had been reduced to the metallic form.

(3) *Vide supra.* Galena, and copper too, is frequently associated with "Black Jack" or zinc-blende, the sulphide of zinc, which would only be recognized as an impurity of no value. This was never utilized, but, it is quite conceivable, by volatilization in the furnace, might become mixed in small and varying quantity with the lead and copper, and show in the assay when its presence was not even suspected by the founders.

(4) The zinc occurring as an oxide in the carbonate of zinc—true calamine—would be reduced by calcination:

$$ZnCO_3 = ZnO + CO_2.$$

In this form as an *ore* it would be mixed by *quantity* with the oxide of copper: the zinc would volatilize and distil upon the copper, enriching it in variable proportion, which, however, when a 20 % quantity was used might be calculated upon to provide sufficient to impart the yellow colouring.

ARTHUR BEANLANDS.

X.

ON THE COINAGE OF HENRY VII.

[See Plates VII–XIII.]

From whatever point of view the coinage of Henry VII be considered there is pleasure and satisfaction to be obtained. Its artistic merit is high, and it reflects in no small degree the beautiful Gothic architecture of the period. One can see in miniature some of the glories of King's College Chapel at Cambridge, and of Henry VII's Chapel in Westminster Abbey, depicted on the sovereigns and some of the groats. If we turn to more purely numismatic grounds, examples of fine striking are the rule, and it must never be forgotten that here for the first time we get a true portrait of the reigning monarch on his coins. The coins occur in large quantities of some denominations, always a source of gratification to the worker, though the rarity seeker may still have his tastes catered for in searching for some examples of very uncommon occurrence.

My own interest in the coinage is an old one of some twenty-five years; but even now all the problems connected with it are not solved, and lately Mr. Henry Symonds has awakened a new interest in it by the publication in vol. x of the *British Numismatic Journal* of the various documents authorizing the coinages of this king. Mr. Symonds has been able to correct many of Ruding's dates, and has brought new

documents to light in a most satisfactory manner. I hope with these documents as a guide to suggest the identification of the various coins which were struck under the orders thus given.

Henry VII came to the throne on August 22, 1485, as the result of the victory at Bosworth, but it was not until November 2nd of the same year that any steps were taken towards the issue of a new coinage. The earliest coins, therefore, of Henry VII's reign must have been the continuation of coins of Richard III. The identification of these coins is obviously as impossible as would be the separation of the coins of Queen Victoria dated 1901 into those struck before and after the Queen's death.

Henry VII's first letters patent were issued to Sir Giles Dawbeney, Kt., and Bartholomew Reed, goldsmith, appointing them masters and workers, and keepers of the exchange within the Tower, the realm of England, and the town of Calais, dated November 2, 1485.

Two days later the king entered into an indenture with the new officials, ordering them to make the following coins:

Gold.—The ryal for 10 shillings, of which 45 shall weigh 1 lb. Tower.

The half- and quarter-ryal (or ryal farthing) in like proportions.

The angel for 6*s.* 8*d.*, of which 67½ shall weigh 1 lb. Tower.

The angelet in proportion.

The alloy was to be 23 c., 3½ gr. fine gold, ½ gr. alloy in each pound, which shall contain £22 10*s.* 0*d.* in coined moneys by tale.

Silver.—The groat for 4*d.*, 112½ to weigh 1 lb. Tower.

The half-groat, penny, half-penny, and farthing in like proportions. The fineness was to be 11 oz. 2 dwt. silver, and 18 dwt. alloy in each pound Tower, which shall contain 37*s.* 6*d.* in coined moneys by tale.

An indented standard trial piece was to be made in each metal. A privy mark was to be placed on all the coins. The pyx was to be opened every three months. The foregoing were the orders for what we now know as the first coinage. Before treating the coins themselves it will be better briefly to continue abstracts from Mr. Symonds's paper.

In the king's fifth year, October 28, 1489, Mr. Symonds gives us the orders for the sovereign. It was to be double the weight of the ryal, and to pass current for 20*s.*, "and of every pound weight of gold that shall be made within the Tower the king directs that they shall make two pieces of the said piece of gold (the sovereign) and no more unless otherwise commanded". Mr. Symonds found no further references to the sovereign during this reign. .

On November 20, 1492, another indenture was made for coins of the same denominations, and of the same weight and fineness as those mentioned in the first indenture. The sovereign is not mentioned. Mr. Symonds points out that a new indenture was necessary because of the death or retirement of Lord (formerly Sir Giles) Dawbeney, whose place was taken by John Shaw.

The authority for the third coinage then follows in Mr. Symonds's paper. He quotes an Act of Parliament, an indenture, and a proclamation, all dated within Henry's nineteenth year, 1503–4. The Act of Parliament tells us that to avoid clipping the king had caused

to be made new coins of groats and pence of twopence which should have a circle around the outer part thereof. Mention is made of a half-sovereign as well as of all gold and silver coins previously referred to. The indenture was made with Robert Fenrother and William Reed as master workers. No change was made in the denominations, weights, or fineness of the coins, and the sovereign is not mentioned. Mr. Symonds is also careful to point out that the shilling, too, is not mentioned, and shows that, so far as is at present known, there is no authority for a shilling to be coined in Henry VII's reign.

I have not quoted other documents brought forward by Mr. Symonds, not because they are not of interest, but because they do not help in solving those problems concerning the coins themselves which are the object of this paper. I may say here that I am, and I think we all should be, most grateful to Mr. Symonds for the flood of historical light he has thrown on this period.

The documents just referred to are the foundations on which to build the whole story of Henry's coinage. They show us that although we speak, and perhaps correctly, of three issues, judging by the types of coins, these issues were not essentially different. The second order was only made because a new official had to be covenanted with. The last indenture, that of 1503, does give us some new coins, as the Act of Parliament tells us of the new groat and half-groat, and figures are given in woodcut in the proclamation, a copy of which, Mr. Symonds tells us, is in the library of the Society of Antiquaries. I have lately seen this proclamation. The coins figured are the arched crown groats, with mint-

marks, greyhound's head, and cross crosslet, and a coin of Charles of Burgundy then current in England. The insertion was made in the proclamation in reference to what should or should not be currency.

We have thus to deal with the following coins:

Gold: sovereign, half-sovereign, ryal, half-ryal, quarter-ryal, angel, and angelet. (There seems to be some confusion between the half-sovereign and the ryal, as both are mentioned in the statute.) Silver: groat, half-groat, penny, half-penny, and farthing. We, however, know nothing of a half-sovereign, nor half- or quarter-ryal, and next to nothing of the farthing.

It would, however, be very unwise to say they were not coined, as has been assumed in our text-books, on account of their non-appearance. The same was said of the half George noble and the crown of the rose of Henry VIII, and of the quarter-angel of James I, yet in the last fifty years all these have been discovered.

The large majority of Henry VII's coins, both in gold and silver, are well known, and correctly appropriated to the various issues. The earliest issue, both in gold and silver, accurately agrees with the coins which preceded it, viz. those of Richard III. They only differ in the name and mint-mark, and in any mark which was inappropriate to Henry. Thus the angel had an ꞓ in place of the R by the side of the mast.

The silver coins were all of the open crown type.

A word of explanation is here necessary as to this open crown type. The crown itself consists of a band from which springs a central fleur-de-lis showing a central and two side foils. At either end is seen the

half of a similar fleur-de-lis in profile, consisting of half the central foil to the outer side, and the whole of the side foil. Between the central fleur and the side fleur is a spiked ornament. This crown was in use from the time of Edward III.

The king's crowned bust on the groat and half-groat is *completely* surrounded by a tressure of arches, usually nine in number, within an inner circle; on the smaller coins this tressure is omitted, but the inner circle is retained. It is as well to remember these details, because it does away with the confusion introduced in Hawkins's *Silver Coins of England* in reference to many half-groats there described as open crown coins which other features, notably the stops, clearly prove to be of later issue. The reverse of the first issue of Henry VII's coins is also in strict agreement with that exhibited on the corresponding coins of Richard III. The long cross is always pattée, notched at the ends. The stops, where visible on all early coins, are saltires, again in accord with Richard's coins.

If the information contained in the indentures of 1485 and 1492 has been rightly interpreted, we should not have anything but the most gradual alteration from coins of the first issue to those of the second issue with the arched crown. The first change seems to have been in the stops between the words where the saltires give place to trefoils, a form of stop last used on coins of Edward IV, about 1471. I shall presently indicate the mint-marks of the coins in connexion with these trefoil stops on the first issue. The gold is in precise agreement again with the silver in this respect. The next alteration was the addition on the

silver coins of a plain double arch to the crown, and the consequent dropping out of the tressure arches above it. This occurred on the groats and half-groats, leaving the inner circle intact except for the interruption by the orb bearing the cross. This cross now fills the position of the mint-mark, which was therefore shifted to the sinister side before the legend. The design of the penny was completely altered, and that of the half-penny, and possibly the farthing, only in so far as was necessitated by the addition of an arch to the crown. The alteration of the figure of the angel was not contemporary with the change in the silver coins, but somewhat later, as two types of angels are known bearing the escallop mint-mark showing respectively the angel with one foot on the dragon, and the angel with the improved design of both feet on the monster. Further alterations, especially in the silver groats, were marked thus: the plain arches to the crown were both ornamented with crockets, and this arrangement then gave place to one in which the outer arch only was so ornamented, and finally to a single-arched crown. The stops, too, changed contemporaneously. The trefoils were replaced by rosettes, and these again by saltires or by no stops. These changes in the stops occurred on all the gold and silver, except perhaps on the sovereign, the issue of which, it will be remembered, was subject to peculiar instructions.

This brings us to the end of the period of gradual alteration, as also to the last of the full-faced silver groats and half-groats. With the advent of the third coinage there is no difficulty where the coins were of altered types, but this does not apply to the gold

angels and angelets, nor to the pence, half-pence, and farthings.

Hawkins assigns all the pence of the sovereign type to the third coinage, although even he saw some reason against his own arguments. Kenyon, on the other hand, does not give any gold coinage at all to this period, although the provisions and date of the order were known to him. Both authors are undoubtedly in error, as I trust to be able clearly to show.

The most useful series to give us a clear view of the whole coinage is the groats. They are the commonest coins, they occur in large numbers, and they show innumerable varieties. There is really only one scientific method of understanding them, and that is to study the obverses apart from the reverses. This is necessary on account of the enormous amount of muling which is to be observed in the series. We must therefore know beforehand which are true coins, as distinct from mules, so as to be able to appreciate the value of the mules as aids to the classification. I should define a true coin as one in which the obverse agrees with the reverse in the mint-mark, lettering, and stops. We may, and do, get mules of the mint-mark, of the lettering, and of the stops, and, further, two or more of these features may be muled on the same coin.

The Groats.

(*a*) The earliest groat is that already sketched out. It is a true open crown coin. The obverse mint-mark is a lis fully displayed over a rose, the sinister half of which is visible. It bears saltire stops, and is of the same type of lettering as Richard III's coins. The

reverse was evidently made for the obverse. It bears the same mint-mark, the same stops, and the same lettering. The long cross pattée has slightly notched ends. The obverse legend is HENRIC DI GRA REX ANGL Z FRANC. The reverse legend is POSVI DEVM ADIVTORE MEVM CIVITAS LONDON, one A on each side of the coin is chevron barred, viz. that in ANGL, and that in TAS [Pl. VII. 1].

The variants in this groat are: 1. The mint-mark. The rose and lis may be distinctly dimidiated so that only half of each flower is visible, or there is the appearance of a sun on the sinister side, as if the proper mark were struck over a rose and sun [Pl. VII. 2]. 2. The stops may be one or two saltires between the words. 3. There may be some abbreviation of the French title. 4. The arch on the breast may be ornamented with a rose, or with a fleur as the other arches, or may be unornamented. This coin is muled first with a reverse bearing Richard's mark of a dimidiated sun and rose (Raymond Carlyon-Britton Collection), also with a reverse marked with a rose (Walters Collection), and further with a reverse without mint-mark.

(*b*) The groat with the rose only. This differs from the coin just described in the mint-mark, in having trefoil stops in place of saltires, and frequently in the presence of a cross each side of the neck. The coin is usually found muled with a reverse without mint-mark [Pl. VII. 3].

(*c*) A small group in which the legend is HENRICVS DEI GRA REX ANGL Z FRA. The head is rather differently formed; it is longer and thinner, and looks less like the bust of Richard III, and much more like

the bust shown on the arched crown coinage. The mint-mark is a cross fitchée; all the A's are chevron barred. The stops are sometimes pellets, sometimes saltires, and sometimes trefoils. The reverse may have been made for the obverse, but in no case that I know of does it bear a mint-mark. Sometimes there is a small cross before POSVI, or in the inner legend after TAS [Pl. VII. 5].

Variants.—The lis m.m. in place of the cross fitchée; sometimes there is a small cross on either side of the king's neck [Pl. VII. 4]. The French title may be variously abbreviated.

(*d*) The groat without mint-mark. This bears a very close resemblance to group (*c*). Two plain arches are added to the crown, and the tressure is accordingly broken. There is no mint-mark. The head, except for the arching of the crown, is built on exactly the same lines as in the previous group. The legend is HENRIC DI GRA REX ANGL Z FRANC; all the A's are chevron barred. Usually a cross is found on each side of the neck. The stops are trefoils. A mullet occasionally found is not a stop. The reverse again bears no mint-mark, and precisely resembles that of group (*c*). It may indeed be that this is a true reverse for its obverse, and that all the group (*c*) obverses are muled with it [Pl. VII. 7]. The well-known so-called pattern groat with the portcullis in the centre of the reverse must have been issued about this time. The obverse has no mint-mark. The reverse is mint-marked with a fleur-de-lis. I believe two groats only of this sort are known [Pl. VII. 6].

(*e*) Obverse m.m. heraldic cinquefoil, otherwise like group (*d*). There are not, however, the little crosses at

the sides of the neck. The legend only varies in the abbreviation of the French title. Trefoils still remain as stops, though the number of stops between the words may be one or two. The true reverse of this group has the heraldic cinquefoil mint-mark, and the long cross pattée has now a cleft in each end. The ⅄'s on what must be the earlier varieties bearing this mint-mark are still chevron barred, but this peculiarity soon gave place to the old unbarred ⅄ [Pl. VII. 9].

Two curious letters make their appearance with this mint-mark on some of the groats, viz. an Ɛ almost like a reversed 3, and an M of almost Roman shape. I think I may say that where the Ɛ occurs it is always in conjunction with the M, but the latter is sometimes associated with the ordinary Gothic G. The letters may occur on either or both sides of the coin [Pl. VII. 12, *rev.*]. Rosettes also for the first time appear as stops.

The obverse here described is found muled with a reverse described under (*d*), viz. without mint-mark [Pl. VII. 8].

The remaining mules are entirely with coins of the succeeding mint-mark, and the stops truly belonging to it, viz. the rosette [Pl. VII. 10, 11, 12].

(*f*) The escallop mint-mark. The design on the groats here shows a further change. The two arches of the crown are both profusely ornamented with crockets. The form of the king's hair is altered considerably, falling from under the crown in long locks of quite a new shape. The fleuring of the arches is more profuse and more ornamental. The new stops, little rosettes, are placed wherever there is room for them. One is frequently found over the top of the

cross surmounting the crown. Indeed profusion of ornament is the key-note of the coins bearing this mint-mark [**Pl. VIII. 1**, *obv.*]. The reverse shares with the obverse in these features. The ends of the long cross are no longer pattée but fourchée to a marked degree, and even in the forks of this ornate cross are to be found the ubiquitous little rosettes. The lettering is a new and more ornate one, agreeing in character with the general style of the coin.

Varieties of the nature of mules occur with the preceding and succeeding groups, both of the mint-marks and stops [**Pl. VII. 12**; **Pl. VIII. 3**]. The escallop coinage was evidently one of constant alteration and change. Many of its members require a separate description for each coin [**Pl. VIII. 1**, *rev.*]. The variation in the legends is to be found in the French title and the abbreviations DEV TDIVTOE and MEV for DEVM TDIVTOREE and MEVM on the reverse. At least two different sets of letter irons can be distinguished, and the unusual letters Ɛ and M are again found. Mules of all sorts are very common [cp. **Pl. VIII. 1 and 2**].

(*g*) The regular cinquefoil, a regular five-leaved figure pierced in the centre. With this mark the coinage becomes more stereotyped. Only the outer arch of the crown is ornamented with crockets. The type of the coin retains many of the features of the escallop coinage, but the profusion of ornament does not continue to the end. Two varieties of stops are found: (*a*) the rosette, (*b*) the saltire cross. A third variety has no stop at all. There is no further variation in the legend beyond what has already been mentioned under the last group. The ends of the long cross on

many of the coins are much less ornamental; this occurs regularly after the change from the rosette stops [**Pl. VIII. 3 and 4**].

(*h*) The pansy or true cinquefoil. This may only be a slight variant of the regular cinquefoil mark. The two lower foils are longer than the upper three, and the middle one is notched in the centre. I have never seen this mark in conjunction with rosette stops on the same side of the coin. It is known, however, with saltire crosses and without stops. Mules occur between it and the preceding and succeeding mint-marks [**Pl. VIII. 4**].

(*i*) The crowned leopard's head. The coins show no change, except in the mint-mark. Coins with crosses between the words or without stops are known as in the last group. The muling is also the same [**Pl. VIII. 4 and 5**].

(*j*) The lis springing from half-rose. Characters, stops, and muling as before. I have noticed here for the first time the abbreviation TCL for TWCL [**Pl. VIII. 5 and 6**].

(*k*) The anchor. This mark is found in three positions—upright, reversed, or prostrate. The position appears to have been at the choice of the die-sinker. The punctuation and muling agree with the previous class [**Pl. VIII. 5, 6, and 7**].[1]

(*l*) The greyhound's head. A further change is discernible for the first time on some of these groats, which now show a crown with a single arch only. The lettering on some of them is very plain indeed, though still Gothic [**Pl. VIII. 8**, *obv.*]. Saltire crosses are always

[1] The *rev.* of No. 7 has been inverted on the plate.

found between the words. Muling connects it with the anchor mark and with coins of the next group, the cross crosslet [**Pl. VIII. 9**]. Besides these, a new mark is found on the reverse only of these greyhound groats, the rose, reference to which will be found under the gold coinage [**Pl. VIII. 8**].

(*m*) The cross crosslet. Coins with this mark are found bearing both the double- and single-arched crowns, and these varieties agree accurately with those observed with the greyhound mark [**Pl. VIII. 11 and 10**]. Muling occurs with the previous group only, as this is the latest coin of the arched crown series.

The abbreviations for the English title on the late greyhound coins, and those bearing the cross crosslet mark, are TNGLI, TNGLIG, and finally TNGL. We also find the recurrence of TDIVTORG on a few greyhound coins, and on the majority of those with the crosslet.

The new type of groat now to be considered is that which owes its being to the documents of 1503–4 already quoted. The full face gives place to a fine profile portrait of the king. A shield of arms bearing the lilies of France and the leopards of England quarterly was now adopted, and an outer dotted circle was placed around both designs. These alterations only concerned the groat and half-groat. The rest of the coinage retained the old patterns.

There is some little difficulty in arranging the groats quite correctly, as muling does not appear to have been used to anything like the same extent as previously, and the stops which are always present are invariably crosses, usually in saltire. The obverse

legend remains practically unaltered, and that of the reverse is also continued except for the inner legend, which was removed. The groats were all struck in London.

(*a*) The groat, which would appear to be the first of this new series, is that with the profile in a tressure of fleured arches which is incomplete above and below the bust. The mint-mark is a cross crosslet continued from the full-face groats. This must have been in issue for but a very short time, as it is of great rarity, only three or four specimens being known with the tressure. **Pl. VIII. 12** shows the work of this groat. It is possibly struck from a die from which the tressure has been removed. The remaining coins with the same mint-mark show two different styles of bust—one closely resembling that shown on this tressure groat, and on groats with the fleur-de-lis mint-mark, and another which is in exact accord with groats bearing the pheon mark [**Pl. IX. 6**]. For the present, therefore, I should be inclined to place next in order:

(*b*) That bearing the lis mint-mark. This shows a finely executed profile bust of the king within a dotted circle [**Pl. IX. 3**]. There are considerable differences in the obverse legend. That most commonly observed is HENRIC VII DI GRT REX TNGL Z FR. HENRICVS in full occurs [**Pl. IX. 2**]. Some groats leave out the numeral VII, and one reads HENRIC SEPTIM. Varieties occur without a mint-mark on either side [**Pl. IX. 4**] or on one side only [**Pl. IX. 5**]. A profile groat with a greyhound's head mint-mark on both sides, and of the fine work shown on the lis-marked coins, is in the National Collection. A rare mule is also known on which the reverse mint-mark is a grey-

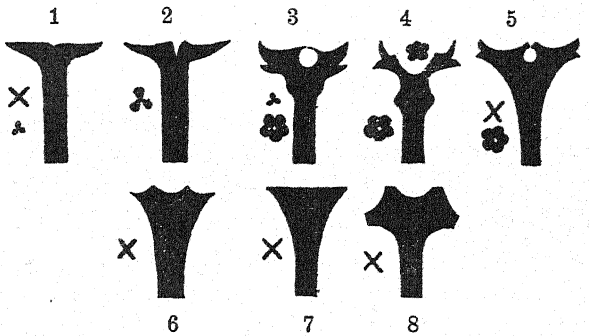
hound's head [Pl. IX. 1]. In workmanship they all closely resemble the shilling which Mr. Symonds has shown must be considered a pattern, as it is not included in any of the documents known [Pl. XIII. 23]. I should like to consider that these lis-marked groats and their varieties are also patterns. Their great rarity would lead one to do so, but there are no satisfactory grounds for such a conclusion in view of the number of different dies known.

(*c*) The mark which certainly comes last is the pheon. These common groats show little variation. The numeral VII always appears in the obverse legend. Muling with cross crosslet occurs, and both mint-marks are occasionally to be found on the same side of the coin. The classification of these late groats, I am bound to admit, is not satisfactory, but any other arrangement is equally objectionable. If the classification is by type the sequence of mint-marks and mules fails, and if these latter are used to guide us the stylistic sequence is broken, and two apparently quite different styles are placed in juxtaposition.

The varieties of the groats have been described very minutely, as upon them depends the whole scientific classification of the coinage of Henry VII, both in gold and silver. The evidence of the long series of mules (mostly two ways) between the mint-marks and the connexion between the open crown issues and the arched crown series cannot be denied; the evidence of the stops is complete. The evidence of finds is in entire accord with the evidence to be obtained from the coins themselves. The series of arched crown coins with the broken tressure thus is: 1, no mint-mark; 2, heraldic cinquefoil; 3, escallop; 4, regular

cinquefoil; 5, pansy, or true cinquefoil; 6, leopard's head; 7, lis issuing from half-rose; 8, anchor; 9, greyhound's head; 9 *a*, rose; 10, cross-crosslet. The stops are on 1, 2, 3 trefoils, on 2, 3, 4 rosettes, on 4, 5, 6, 7, 8 crosses or no stops, on 9, 9 *a*, and 10 crosses.

The accompanying figures show the ends of the long cross on the reverse. No. 1 is found on all the early



coins, and persists up to and includes the first arched crown groat, that without mint-mark. The stops going with it are crosses or trefoils. No. 2, the cleft cross, is found on coins with the heraldic cinquefoil mark. Trefoils only are found with this cross on the groats. No. 3 accompanies the heraldic cinquefoil, the escallop, and the regular cinquefoil, and is in conjunction with trefoil or rosette stops. No. 4 is only found on the escallop and regular cinquefoil pieces, and always with rosettes as stops. No. 5 is associated with rosettes, crosses, and no stops, and is again found on the regular cinquefoil. No. 6, with crosses, or no stops, had a long run from the regular cinquefoil to the early greyhound's head. No. 7 is a cross, only found on the grey-

hound-head groats, and crosses always appear as stops. No. 8 includes a few coins with the greyhound's head and all the cross crosslet coins, and was continued on the profile issues.

Angels.

Now let us briefly look at the other denominations of this king's coins. The most complete series after the groats is that of the gold angels. Early ones are to be found exactly in accord with those of Richard III [Pl. IX. 7]. The mint-marks agree with the groats so far as they are known, but I have not yet heard of one with a fleur-de-lis alone or with a cross fitchée. Major Carlyon-Britton has the rose-marked angel. The stops also agree with those on the groats—first crosses, then trefoils. Mules are again in evidence. The change in type from the angel with one foot on the dragon to that in which both feet were planted on the animal was not effected at the same time as the arch was added to the crown in the silver coinage, but later, during the run of the escallop mark. This is further evidence that change in type does not synchronize with the date of the second indenture. We find on the later angels all the mint-marks known on the groats, except the leopard's head. This absence is not due to want of discovery, as muling takes place between the true cinquefoil mark and the lis issuant from the half-rose, between which marks the leopard's head occurs in the groat series. The mules found on the second type of angels compare favourably with those on the silver, and the stops are in agreement. The legends do not require much notice, as the chief differences are due to abbreviations on the obverse in the

French title, and on the reverse in some of the words of the rather over-long inscription. One or two of the earlier angels, however, bear the legend IhC TVTEM TRTNSIENS PER MEDIVM ILLORVM IBTT as on the old nobles. This legend occurs on some angels of the first type without mint-marks, on a mule of the heraldic cinquefoil and escallop marks, and finally on some true escallop-marked pieces. I have not been able to account satisfactorily for the presence of this legend. The lettering is in strict agreement with the groats, and the two peculiar letters Ɛ and M are found where one would expect to find them, on angels with the escallop mint-mark. On **Pl. IX. 8, 9, 10, and 11,** illustrations of some of these varieties are given.

At the end of this series of angels there are some which require more detailed notice. They are those bearing as mint-marks the greyhound's head, the cross crosslet, and the rose. The two former are found with cross stops and with rosette stops [**Pl. IX. 12; Pl. X. 1 and 2**]. As long ago as 1892[2] this greyhound-head rosette coin already gave me cause for thought. Here was a feature on the gold which was not represented on the silver. It was suggested then that possibly the greyhound's head might have been used twice in the series. I was not then aware of the existence of a crosslet-marked angel with rosette stops, and my faith in Kenyon was then unshaken. What I take to be the true explanation of this curious discrepancy between the gold and the silver is as follows. We now know that both these marks occur on

[2] *Num. Chron.*, vol. xii, p. 283.

third-coinage groats; we also know, though apparently Kenyon did not recognize the fact, that third-coinage gold should, and does, exist. It seems clear and obvious, therefore, that as the type was not changed on the gold as it was on the silver, some evidence should appear on the coin to indicate this difference. Here then we get probably the true reason for these late rosette-marked angels, to show which were struck before, and which after, the indenture of 1503–4. The rose-marked angel is now also known (Montagu Catalogue, May 1896, Pl. iii, No. 667).[3] This bears the numeral VII after the king's name. Small crosses are used as stops. The story of my reference to this Montagu coin is sufficiently interesting and instructive to be recalled here. I was discussing this explanation of these late rosette-marked angels with Major Carlyon-Britton and his son, also a collector, when the former brought out a half-angel with the rose mint-mark and rosette stops muled with the crosslet. He asked me my view of this new variety. I replied that this ought to be a third-coinage piece, and that if my view were correct there ought to be a coin with the rose mint-mark, and with crosses as stops. There was not such a piece in Major Carlyon-Britton's large collection, and we resorted to sale catalogues, where we found the predicted coin illustrated. This prediction may, I hope, one day be followed by the discovery of two other coins, viz. an angel, m.m. rose with rosette stops, and a groat with the full face and a rose mint-mark on both sides. Montagu's rose-marked angel is the only one I know of with a numeral. Kenyon's description of

[3] Now in the British Museum.

a pheon-marked coin with numeral is not sufficiently reliable to trust to. The only remaining angel of Henry VII bears the pheon mark, and is the last of the series. This mark was never used on the full-faced silver coins, so that there was no necessity for placing rosettes on it. Muling between the cross crosslet and pheon marks is fairly frequent, and here again we find the distinction where the crosslet was used on the third coinage. It is accompanied by the pheon on the same side of the coin. These coins thus bear two mint-marks on the same side [Pl. X. 3 and 4].

The Half-angels.

The series of half-angels is a much shorter one than that of the angels. Fewer mint-marks are found on them, and it is probable that some mint-marks found on groats and angels were never used in the half-angel series, as we find half-angels bearing on obverse and reverse of the same coin two mint-marks which in the angel and groat issues are separated by mint-marks that are not known on half-angels. Why the demand for these smaller coins was less than for the larger denomination we do not know, but viewing the whole series of the English gold coinage the halves of the unit appear always to have been issued in smaller numbers than coins of larger value. Commerce of the country doubtless was one great factor contributing to this result, but that would not account for the rarity of such coins as the half-noble as compared with its quarter. The half-angels of early type bear the sun and rose and the lis and rose mint-marks. The variety without a mint-mark is also known. The

second type gives us the regular cinquefoil, true cinquefoil, anchor, rose, crosslet, and pheon, all with the stops belonging to the respective series. The mules are anchor and cinquefoil [Pl. X. 6] and rose and cross crosslet [Pl. X. 7 and 8]. The rose shows rosette stops. On one of these half-angels the reverse legend is followed by four crosses with a rosette in the centre ✕❁✕ [Pl. X. 7]. This curious mark will again be referred to in connexion with the sovereign.

The Half-groats.

The next series to be dealt with is that of the half-groats. These coins were issued from three mints—that of London, and the ecclesiastical mints of Canterbury and York. The London half-groat with open crown corresponds with the groat. The obverse mint-mark is the combined lis and rose. The stops are saltire crosses. There is neither mint-mark nor stop on the reverse [Pl. XI. 5]. Three or four only of these coins are known. In the Fox Cabinet is a mule of the same coin in which the reverse may be from a Richard III die; it is marked with the dimidiated sun and rose.

No half-groats are known corresponding with any of the other varieties of the open crown groat.

Those bearing the arched crown and broken tressure give us the only two other mint-marks to be found on London half-groats.

(*a*) The escallop. The coin bearing it has also trefoil stops, and agrees in all particulars with the corresponding escallop-marked groat. This variety is nearly as rare as the open crown half-groat. The crown is double arched; both arches are ornamented. The long cross on the reverse has the ends fourchée [Pl. XI. 6].

(*b*) The lis mint-mark. This issue differs in having the arches of the tressure unfleured. Only the outer arch of the crown is ornamented. There is usually a fleur-de-lis on the breast. In the centre of the reverse cross is a lozenge-shaped space enclosing a pellet. The coin is known without stops on the reverse [**Pl. XI. 7**]. Another variety provides us with rosettes as stops [**Pl. XII. 1**]. Two varieties of lettering occur on these scarce little coins, a larger one on the earlier pieces, and a smaller one on those coins which have rosettes on the reverse.

The latest full-faced half-groat of London is described in Hawkins as an open crown coin of the first issue in spite of the fact that the tressure is broken above it. The crown itself is somewhat different from that found on the true open crown coin in that it is lower in consequence of the thin band placed on the king's head as compared with the thicker and jewelled band found on the early coin [**Pl. XII. 2**]. Except for this alteration, these last London half-groats agree accurately in type with the latest arched crown pieces just described. The mint-mark is still the fleur-de-lis and the stops are always rosettes. The lozenge and pellet is still retained on the reverse and rosettes are placed with profusion in both legends. I can instance one coin which omits the central ornament on the reverse.

The half-groats of Canterbury, judging by the mint-mark, were all struck under the jurisdiction of Archbishop Morton, who held the see from 1487 to 1500. The series opens with a true open crown coin. The mint-mark is a ton. Trefoils or pellets are used as stops and there is a cross on each side of the neck.

In the centre of the reverse is an ꝏ, the archbishop's initial. There is the representation of an eye placed after POSVI [Pl. XII. 10], but no mint-mark on *rev.*

This coin is followed by one which precisely resembles it, except that two plain arches have been added to the crown, which however still has the thick jewelled band; the tressure above the crown is incomplete. The eye of Providence is occasionally to be found in the obverse legend after GRꝬ. There is no mint-mark. The reverse is almost unaltered. The central initial is still present and also the eye of Providence. The stops correspond with those on the obverse, viz. trefoils [Pl. XII. 11]. This type of coin is at present unrepresented in the London and York series. Following this scarce issue comes the common series of Canterbury half-groats with the regular arched crown with a low band. The earlier forms have two mint-marks, the ton and the lis, sometimes together on the same side of the coin. The stops are trefoils and later rosettes, still later crosses, and lastly none. The trefoil-marked obverse is united with the earlier reverse [Pl. XII. 12] and also with a rosette reverse [Pl. XII. 13]. I have not seen a true coin with trefoils on both sides. On the later varieties the ton mint-mark is found, usually alone, but on two or three coins accompanied by a regular cinquefoil. There is never a lozenge and pellet in the centre of the reverse on any Canterbury half-groat, although the ꝏ characteristic of the early coins was shortly removed. Mules both of mint-marks and stops are of frequent occurrence.

These common Canterbury half-groats exhibit many examples of letter variation, both in the shape of the letter and in the occurrence of many broken punches

for the letters, especially in the T and R. The I on the rosette-marked coins is a thin one with a mere nick above and below and no sign of a serif [Pl. XII. 13]. This same letter is continued on coins with cross stops and on still later coins with no stops. On this last class we also get an I with a much thicker post and with a well-marked ornamental serif [Pl. XII. 14]. Coins arranged on this plan show first an alteration from TDIVTORG to TDIVTOG in the reverse legend and then a change from TRGL to TGL on the obverse. If we compare these same words with those on the groats, we find that this series of half-groats runs from the time of the escallop to that of the anchor or thereabouts. The series then ceased to be struck at Canterbury.

The half-groats struck at York, as is shown by their work, were first issued concurrently with the London arched crown half-groats bearing the lis mint-mark. They agree with these in the mint-mark and in bearing rosette stops. The lis is present on the breast of some of them [Pl. XII. 3]. These were followed by the series without the arches to the crown, as on the London coins. A lozenge and pellet is with very rare exceptions present in the centre of the reverse [Pl. XII. 4]. The stops on both these varieties are rosettes. There are no York coins in accord with the long series of Canterbury half-groats. The pattern of the later York half-groats is different in omitting the tressure. There are generally two keys at the sides of the king's neck. Two varieties of this coin exist, one with the typical Gothic lettering [Pl. XII. 5], and a second with nearly plain letters, very like those on some of the greyhound groats. These plain letters

recur on half-groats of a common type in which the tressure has been restored [Pl. XII. 6], and then again Gothic letters from different irons are in evidence [Pl. XII. 7]. On the latest of these is to be found a new form of A with a curved first stroke [Pl. XII. 8]. The mint-mark on all of them is the martlet. On one of these there are no keys on the obverse [Pl. XII. 9].

The A will be referred to presently on the third coinage, so that we may feel sure that the full-faced coins bearing it are the latest of their kind. This shows us that the Gothic letter pieces which otherwise agree must be later than the coins with the severer form, so that the sequence is here again complete: 1, no tressure; 2, tressure coins with plain letters; 3, tressure coins with Gothic letters; 4, the same with the peculiar A. These last show a further connexion with the third coinage in the cross endings. The earlier coins give us an ornamental fourchée cross, these late ones almost a club-shaped ending.

With the advent of the third coinage the type of half-groat was changed to the profile portrait. Only London and York issued these half-groats. The London coins bear the mint-marks lis [Pl. XII. 16], pheon, martlet, and rose. The muling is between the lis and the pheon, and between the martlet and the rose. The true coins with the lis mint-mark agree with the corresponding groats, and there is one which, like the groat, omits the numeral VII [Pl. XII. 15]. It is one of the very rare coins of Henry VII. Crosses are always found as stops between the words. The curious A before mentioned on the full-faced half-groats is again in evidence on some coins of this third issue [Pl. XII. 15]. The York half-groats follow the pattern of the London

pieces and most of the peculiarities found on them. They are differentiated only by the addition of two keys below the shield on the reverse. The mint-marks are the martlet, as on the full-faced coins, and then the rose.

On both London and York coins with the rose mint-mark two forms of the reverse cross endings occur. The earlier of these (No. 8, p. 221) is in evidence on all these third-coinage pieces. The later has two distinct branches and is found again on the early half-groats of Henry VIII [**Pl. XII. 18**].

This double variety of the rose-marked half-groat should place this mark last, following the martlet with which it is muled both on London and York coins. The London lis and pheon coins should therefore precede these. If this be correct, however, then the coins with the peculiar Ꝗ are separated from each other, as the letter only occurs on coins with the lis mark and the martlet mark, and not on all of these. The same difficulty of classification, it will be remembered, occurs in the profile groat series.

I have noted on both the London and York half-groats of this third issue the curious reading of the king's name as hꞒ'RIꞀ. It appears as far as I know only on coins with the martlet mint-mark at both mints, and is always associated with the curious Ꝗ before mentioned. There is evident design in this spelling, as the presence of the mark of abbreviation [**Pl. XII. 17**] after the Ꞓ shows us; moreover the variety occurs on many quite different dies. The possible import of it will be mentioned later.

A general view of the half-groats would lead us to suppose that London began the issue, and that Canter-

bury then took it up, and that a little later all three mints were active together. Then London and York dropped out, and for some time Canterbury continued alone, to be followed by York alone, until the third coinage, when London started again, and a little later York also. There are no Canterbury coins at all of any kind, as far as we know, of the third coinage.

The Sovereigns and Ryal.

The short series of sovereigns may now suitably be considered. There are five types, all of them differing in some essential detail. In view of what has already been stated about mint-marks and stops, it is not very difficult to arrange the series. 1. The earliest mint-mark to be observed on this group is the cross fitchée. This occurs on a very rare sovereign which belonged to the late Sir John Evans. It is badly figured in Kenyon, Pl. vi, No. 46, but a more exact picture of it is shown on **Pl. X. 9** herewith. The king is seated on a low-backed, low-armed throne, with all the ground of the coin diapered with fleurs-de-lis. The king wears an arched crown, and is holding the sceptre in the right hand and the orb in the left hand. The legend is HENRICVS DI GRACIA REX ANGLIE ET FRANC DNS IBER. The stops are crosses. The reverse shows a full-blown rose charged with a shield bearing the arms of France and England quarterly, and surrounded by the old legend found on the nobles, but ending IBATHE. Trefoils are used as stops. The corresponding half-sovereign, also a very rare piece, is what we now call the ryal. The king is represented standing in a ship, the details of which are well shown on **Pl. X. 10**. The mint-mark is again a cross

fitchée. The legends need no description except to observe that IBAR is again used as the Irish title. All the A's are chevron barred, and all the stops are trefoils. Only the French arms are shown on the shield of the reverse. The few examples of the ryal are all precisely the same.

2. The next sovereign differs in detail. It is figured in Kenyon, Pl. vi, No. 45, and on **Pl. XI. 1.** The diapering is left out. The throne has a higher back. On the reverse the full-blown rose is crowned. The mint-mark is the heraldic cinquefoil, and the stops are those which belong to this mark, trefoils. The obverse legend ends IBARNE. This sovereign is probably unique, and was in the collection of the late Sir John Evans (now in the National Collection).

3. The next sovereign, we know, is much later in type and style and entirely different from these two early ones (Kenyon, Pl. vii, No. 48; also **Pl. XI. 2**). We now get a fine representation of a throne rather than a flat chair or bench. It is almost impossible to describe in detail all the various features on the coin. The figure of the king is smaller than on the earlier coins. The throne has a high back and beautifully ornamented arms. The mint-mark is a dragon, a mark which only occurs on the gold sovereigns. The stops are mullets or stars of five points. The lettering shows open C's and E's, and the other letters almost of a Roman type. The obverse legend ends IBAR. The rose on the reverse is smaller, and is within a tressure. The stops and mint-mark and lettering agree with the obverse. There is nothing very marked on this sovereign to guide us as to date, but I think that the general style

would place it somewhere about the same time as the late escallop groats or those immediately following. It may, however, be somewhat, but not much, later.

4. The fourth type (**Pl. XI. 3**; also Kenyon, Pl. vii, No. 47) resembles the third in that there is a small figure of the king. There is now a canopy over the throne; the seat is much extended at the sides, bringing the low arms with their high terminals a long way from the king's figure. The king's head bears a marked resemblance to that shown on the full-faced groats with the cross crosslet mint-mark. Gothic letters are used on both sides. The obverse legend ends ħIBΩ, the stops are saltire crosses, the mint-mark is a fleur-de-lis. The reverse design is the same as that on the third type, but saltire crosses are used as stops as on the obverse. The mint-mark is a dragon. At the end of the legend is the same curious mark of a rosette with four surrounding saltires previously noticed on the early third-coinage half-angel. This mark enables us to place this sovereign to the same coinage as the half-angel. I may also point out that the lis mint-mark on the obverse points to the same conclusion, as this latter is found on the profile groats and half-groats.

5. The last type of sovereign which I propose to ascribe to Henry VII is usually attributed to Henry VIII. In style and work it closely resembles the coin just described [**Pl. XI. 4**]. There is no canopy over the king's head, and there is a large portcullis under his feet. The arms are brought close to the king's figure and a tressure of small arches fleured internally has been added. There is no numeral after the king's name on any of these sovereigns. The reverse design hardly

differs at all from that on types 3 and 4. The mint-marks on this type of coin are: *obv.* lis, *rev.* cross crosslet. Another has m.m. *obv.* lis, *rev.* pheon, a third lis both sides, and a fourth portcullis on both sides. This last coin is obviously struck under Henry VIII. The crosslet, lis, and pheon are, however, all mint-marks of the third coinage of Henry VII, and of these only the pheon was used by Henry VIII on his silver first issue. Here, too, it is very rarely met with, and we know of no early angels of his with the mark, and only very few groats. We must therefore, I think, place to Henry VII's third coinage the sovereigns bearing these three marks, and to Henry VIII any with the exclusive marks shown on his silver, namely, the portcullis, castle, or sun and cloud. The cross crosslet was never used by Henry VIII, so that all coins bearing it must be those of his father. The sovereign with the lis and pheon marks is precisely like that with the lis and crosslet, so that the same attribution must be made. The lis-marked sovereign, of which there appear to be two of slightly different workmanship, must be attributed to Henry VII or to Henry VIII by comparison of the work. One other guide which may be helpful is that the lis is sometimes overstruck on a sun and cloud mint-mark. These sovereigns are, of course, to be given to Henry VIII. It is unfortunate for us that no change of type was made on any of these sovereigns until the third coinage of Henry VIII, *circa* 1542.

It must always be remembered in dealing with the sovereign, both during the reign of Henry VII and until the twenty-fourth year of Henry VIII, that the only order we have for making it was that of 1489, and that this order was hedged round with unusual instructions

already quoted. Mr. Symonds has already referred to the rarity of Henry VII's sovereigns, and has suggested one probable cause in the remelting of these heavy pieces to produce the later debased gold of Henry VIII's coins towards the end of his reign. The order, however, only allowed two sovereigns in each pound weight to be made, so that under no circumstances could these coins ever have been common. I have never heard of a hoard in which any of them have been present.

The Pennies.

The series of pennies must now claim attention. There are three main varieties: 1, the open crown pennies; 2, those with the arched crown; 3, those showing a seated figure of the king.

The first variety was struck at London, Canterbury, York, and Durham. All of them are early coins and there is no ambiguity about them and no necessity to distinguish a true from a pseudo-open crown as was the case with the half-groats.

I know of two different London pence of this issue, one bearing the lis and rose mint-mark, the other presumably the cross fitchée. The coin with the lis and rose belongs to the series of groats and angels and other denominations bearing the same mark. I am unable to describe the stops, if any, as I have never seen a coin sufficiently well preserved to show one. They should be crosses. These pieces are of very great rarity.

The other penny has a cross on each side of the neck. The stops are trefoils on the obverse. The mint-mark, I think, should be the cross fitchée, as groats and a

half-penny with this mark also have crosses at the sides of the neck, and it is the only mint-mark where the coins bearing it form a series. The sovereign and ryal have just been mentioned. This penny, like its predecessor, is of high rarity.

The York pence with the open crown emanate from the archiepiscopal mint of Thomas Rotherham.

A rose is the only described mint-mark. Mr. Walters had a coin which he thought might have had a sun and rose mint-mark. I also have one. The stops on mine are however trefoils, which should not be the case if it were really a sun and rose.

The few varieties known are tabulated below.

1. *Obv.* M.m. rose, HENRIC DI GRT REX TN, T to right, a cross to left of neck, cross on neck. *Rev.* CIVITTS EBORTCI, h in the centre of the cross. An additional pellet in two quarters of the reverse [Pl. XIII. 1].

2. Varies in having T and trefoil at the sides of the neck and a quatrefoil instead of h in the centre of the reverse. The long cross on the reverse has the endings pattée [Pl. XIII. 2].

3. T and a key at the sides of the neck, quatrefoil in the centre of the reverse.

4. T and lis at the sides of the neck, h in the centre of the reverse.

5. T and quatrefoil at the sides of the neck, h in the centre of the reverse.

The Durham open crown pence are extremely rare in anything like reasonable preservation. They have the ordinary legends. The mint-mark is a cross and there is an S on the king's breast for Sherwood, and a D in the centre of the reverse. There are no stops

visible on any of the specimens I have seen. Except for the name and mint-mark they are in precise agreement with the Durham coins of Richard III [Pl. XIII. 8].

Canterbury also issued an open crown penny from Archbishop Morton's mint. The mint-mark is a ton as on all his coins. There is a cross each side of the neck. His initial Ꝏ is on the centre of the reverse. I can give no information about the stops. The corresponding half-groats, however, have pellets or trefoils. The cross ends, to judge from the figure in Hawkins, are pattée.

Following this coin, but nowhere near it in date, is the well-known rarity, the only full-faced arched crown penny of Canterbury [Pl. XIII. 7]. The coin agrees with groats and half-groats as the cross ends are fourchée, and varieties are known with rosette stops or without any stops. The mint-mark is a ton. Some coins have the mint-mark on both sides. It is probably contemporary with the groat with the regular cinquefoil. We do not know why Canterbury should have adopted this type in preference to the sovereign type which was in issue before it at the other three mints.

The sovereign type penny gives us a new variety of coin. On the obverse is a seated figure of the king, on the reverse a long cross bearing a shield with the arms of France and England quarterly. The design is therefore very like the sovereign itself. Three mints were responsible for these coins—London, York, and Durham.

Upwards of fifty years ago, Sainthill, in his *Olla Podrida*, showed conclusively that some sovereign type pennies at least must be assigned to a period before

1503, or, in other words, that these pence correspond in time of issue to arched crown silver coins. He took his arguments from the Durham coins and the dates of certain existing indentures for the coins which were produced to him at Durham. It is quite impossible to resist these arguments, and yet we find in the later editions of Hawkins, 1876–87, that all the sovereign type pence are to be assigned to the third coinage.

Now let us view the Durham coins, none of which bear mint-marks.

Obv. The seated figure surrounded by the usual legend HENRIC DI GRA REX. A crosier before the legend. *Rev.* Shield of arms over a long cross pattée with clefts, the upper limb ending as a crosier. The initials DS at the sides of the shield. The surrounding legend is CIVITAS DIRHAM and there are no stops.

A second variety also with DS at the sides of the shield gives us a different throne and omits the crosier on the obverse. This coin shows annulet stops on the obverse, and is the only Durham coin I have ever seen with a stop. I shall discuss the thrones later in connexion with the three mints. The date of the indenture for the striking of these DS pence is Sept. 20, 1489, the same year as that for the sovereign. It was made between the Bishop, John Sherwood, and George Strayel, and was to cover three years.

The only other Durham coins we know of are all of the same general type as Sherwood's, but they are marked DR or RD at the sides of the shield and have a mitre springing from a crown replacing the crosier above the shield. The cross is always fourchée. There is no episcopal sign on the obverse. These coins are attributable solely to Richard Fox, bishop from 1494

to 1502. He is the only bishop to whom the initial R can apply. Sainthill and Noble showed that the indenture for the coins was dated Jan. 20, 1495, and was made with William Richardson.

Bishop Fox's coins are not at all rare. They differ only in the form of the throne. The name of Bishop William Sever, 1502–5, has been brought in, I expect by the editors of Hawkins, to bolster up their arguments for the lateness of the sovereign type pence. There are no distinctive features on the coins to warrant such a conclusion.

The York coins are of the same general style. They all have two keys below the shield on the reverse of the coin. There is never a mint-mark, but to balance this lack we have many coins with stops.

The London coins are again in general agreement with the Durham and York issues, but here we get in addition on some coins a mint-mark as well as stops. Unfortunately for us the London coins are very uncommon.

Following the plan adopted throughout this paper, I now propose to arrange these sovereign type pence according to the mint-marks, when we get any of them, and to use the stops and cross ends to fill in the sequence.

The first variety. Fig. A.

This gives a throne without arms, but otherwise almost exactly like that shown on the two early sovereigns, without, however, any ornamentation.

This coin occurs (*a*) at London. A picture is given of it in the Walters Catalogue, No. 505. The stops are not visible. The cross is cleft. Mint-mark invisible.

(*b*) At York. The York coins all appear to have the sceptre in the left hand. The king's figure is a large one as compared with all later coins. The mint-mark

FIG. A.

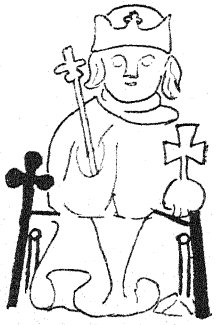


FIG. B.

FIG. C.

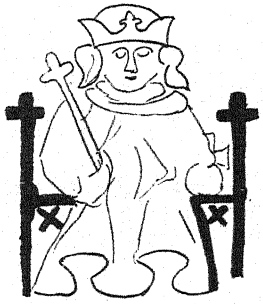


FIG. D.

is absent. The stops are pellets or trefoils. The cross is cleft [Pl. XIII. 3].

I know of no Durham coins of this type.

Second variety. Fig. B.

The throne has an arm on the right, ornamented with a trefoil like those used for the trefoil stops.

By the side of the king's legs there is a space filled in with a hollow ornament. The cross on the reverse is cleft.

This occurs at (*a*) London. Mint-mark heraldic cinquefoil on the obverse only. Stops not visible [**Pl. XIII. 13**].

(*b*) York. Stops on obverse only, trefoils [**Pl. XIII. 4**].

(*c*) Durham. DS at sides of the shield. No stops [**Pl. XIII. 9**].

Third variety. Fig. C.

The throne still one-armed, but the arm is brought close in to the king's leg. The arm is surmounted by a trefoil. The cross is cleft.

(*a*) London. With trefoil stops on both sides. No mint-mark [**Pl. XIII. 14**].

(*b*) York. No stops. A trefoil in the field on the left, and a pellet by the king's leg on either side. Another replaces the usual lis on the sceptre with a trefoil [**Pl. XIII. 5**].

(*c*) Durham. DS. A second low post appears by the side of the king's leg. There is no crosier on the obverse. Stops annulets on one specimen.

Fourth variety.

The throne itself is of the one-armed form, but the terminal is now a rosette. The cross is fourchée.

(*a*) London. Unrepresented.

(*b*) York. Rosette stops.

(*c*) Durham. With RD, not DR [**Pl. XIII. 10**].

Fifth variety.

A fleur-de-lis on the arm.

(*a*) London. M.m. fleur-de-lis. Rosette stops [**Pl. XIII. 15**].

(*b*) York. Rosette stops. I have one united with a trefoil-marked reverse.

(*c*) Durham. RD and DR.

Sixth variety. Fig. D.

Two long arms to the throne, the one at the left reaching above the orb on its right.

(*a*) London. A fleur-de-lis on each arm, m.m. pansy [**Pl. XIII. 16**].

(*b*) York. Not represented.

(*c*) Durham. DR [**Pl. XIII. 11**].

Seventh variety.

Crosses on the arms.

(*a*) London. With saltires in the obverse legend.

(*b*) York. No stops. One coin has a saltire each side of the king's leg, another has on the king's left three saltires [**Pl. XIII. 6**].

(*c*) Durham. DR and RD [**Pl. XIII. 12**].

Besides these, of the same type—

(*b*) York. With a trefoil on the right arm and a rosette on the left. Rosette stops. Unrepresented elsewhere.

(*c*) Durham. With apparently a rosette on each arm. RD.

The particulars shown in the previous descriptions would lead us to the suggestion that, on the evidence of those coins with stops, the ornament on the arm on those without would point to the stop period to which they should naturally belong. Thus the trefoil ornament should denote the time of the heraldic cinquefoil and escallop groat period, the rosette and the lis that of the escallop and regular cinquefoil, and the cross the later periods of the arched crown issues. There is so

little to guide us on these pennies that this would seem to be a substantial attempt to classify them with the larger coins.

The most difficult part of the whole subject of the pennies is the attribution of some to the coinage of 1503. With very few exceptions the coins of the three mints are in complete agreement. Want of discovery is probably one cause of absence, and a further search may reveal some missing coins. With all this, however, if we refer to the Durham coins, we shall have to admit that at none of the three mints can we find a penny with difference substantial enough for us to attribute it to the coinage of 1503–4 or later.

The London and York coins both resemble the Durham coins of Bishop Fox, 1494–1502. Where then are the coins which follow these? Only two alternatives are allowed us: either none were issued or they are still mixed up with pence now known. The absence from want of issue during seven years is to my mind inconceivable. I could understand that explanation applying to some denominations, such as the sovereign or the half-groat, but the penny was the people's standard, and there must have been pence issued during these years. No period of our Plantagenet and Tudor coinages, except the reign of Edward V, shows this complete absence. Even the seven months' restoration of Henry VI gives us several pence. I therefore consider they have been and are still mixed up with other pence. There are two places where we may seek them. One is among those already described. The two York pence with the saltire crosses inside the lower part of the arms of the throne might do if we

were very hard pressed. The other source to explore is the coinage given to Henry VIII by Mr. Hawkins. I think that here we shall find what we are in search of in the pennies with double arms to the throne.

The type of all these pieces is just the same as that of the described Henry VII's pence, except that each arm is longer, and each is composed of a double line surmounted by a fleur-de-lis. These pence are

FIG. E.

known of three varieties (Fig. E)—one with no mint-mark [Pl. XIII. 17], a second with mint-mark pheon, and a third with mint-mark portcullis. I rather think I have seen a fourth with the mint-mark castle in the Fox collection. Those bearing the castle and portcullis are undoubtedly coins of Henry VIII. We have his groats and some half-groats with these marks which only differ from his father's in having the extra stroke in the numeral. The same may be said of the pheon mark. But pheon-marked coins of Henry VIII are of great rarity as compared with the common ones of Henry VII. The pheon-marked penny thus should belong to Henry VII. The coins

without mint-mark should in my opinion also be referred back to Henry VII. This would continue the long series of pence without a mint-mark under Henry VII, and they would I think appear better here than attributed to Henry VIII, all of whose coins, as far as I know them, are mint-marked. In this position they would bring the pence into line with the other silver coins which show that Henry VIII did not alter any of the types in issue at the date of his accession, but only altered a number where one was before, and added a mint-mark. This still leaves us without late pence at the two ecclesiastical mints, as the coins under discussion are all London coins, but it gives us a few that we may look upon as Henry VII's final issue.

Half-pence and Farthings.

There now remain only two denominations of Henry VII's coins to discuss, the half-pence and the farthings.

The early open crown half-pence are a well-defined group, and of London only as far as I know. The first one has the lis and rose mint-mark which places it in its proper position along with the other silver and gold coins with the same mark [Pl. XIII. 18]. Mr. Walters had a half-penny m.m. rose with a cross each side of the neck. The next that I know of is a half-penny with the mint-mark cross fitchée, which like the groats has a cross each side of the neck [Pl. XIII. 19]. There may be other slight varieties of these rare pieces with the open crown.

Then follow the arched crown issues. Let me here

give a word of warning against referring a half-penny with the arched crown to the open issue in consequence of the coalescence of the arch with the inner circle. The appearance is easily deceptive. The orb above the arched crown is, however, usually visible at the top of the coin, whereas the open crown never had an orb. The half-penny which I should place first of the arched crown issue is one with a cross each side of the neck. No mint-mark is visible, and there is not room for one. No stops are visible either. Otherwise it compares well with the first arched crown groat without mint-mark.

A halfpenny with mint-mark heraldic cinquefoil continues the sequence. No stops are in evidence. The crown has a single arch. The reverse ends of the cross are not fourchée, which is all I can say of my solitary specimen, which has not sufficient on it to allow us to theorize further [Pl. XIII. 20]. Following this comes a half-penny with a double-arched crown and trefoil stops, and the reverse cross is cleft. No mint-mark is visible [Pl. XIII. 21]. I have some half-pence with rosette stops and single arch to the crown without mint-mark. The reverse cross is fourchée at the ends. On one of these I think I can discern an escallop mint-mark which would agree with the stops.

There is also a half-penny without stops and with a single arch to the crown, and again with the cross fourchée on the reverse. No mint-mark is visible [Pl. XIII. 22]. This wellnigh completes the list of London half-pence issued before 1503–4. They all read HENRIC DI or possibly DEI, GRT REX, and sometimes T. Canterbury issued a half-penny of the

same type, with rosette stops and with the lis mint-mark on one or both sides. The crown is with a single arch and the cross is fourchée. This clearly corresponds with the Canterbury half-groats and arched crown pence. The British Museum has one without mint-mark, and I have one presumably with the lis mark and crosses as stops.

We know hardly anything about the late half-pence ordered on the indenture of 1503–4. I can, however, bring forward one that should correspond with this order. It is a full-faced arched crown coin, m.m. pheon. The bust is a very small one, and I think there is a saltire after DI. Mr. Walters had a more satisfactory one illustrated in his Catalogue, No. 517, with the same mint-mark, reading DI⁜ GRT⁜ RHX× and with the same small bust. Both these are London coins and appear to have been varieties unknown to Hawkins, who gives no half-pence to this issue.

Judging by the size of the bust and the style of the work, the half-penny struck at York, with the key under the bust, should be placed to this issue. It is figured in Hawkins, No. 377. The mint-mark is said to be a martlet. Saltires are used as stops, and the legend reads ×RHX T. The reverse cross is fourchée.

This probably does not exhaust all the varieties of half-pence, but the large majority of these little coins are in such an imperfect state of preservation that they are quite useless for anything better than guess-work. The weights of the half-pennies are very untrustworthy, and vary from 7 grains to 3·5 grains irrespective of condition.

The farthings attributed to Henry VII are thoroughly unsatisfactory. I quote Hawkins: "There are two

in M. B. One is quite illegible, on the other the obverse legend is imperceptible, but there is a letter, E and I (?), on either side of the head, and the reverse legend is CIVITAS (EBO)RACI." Of course, at present, the coins themselves are unavailable, but surely no serious attribution can be made of the first one, and of the second all I can say is that it is in the highest degree unlikely to be of Henry VII's time, when we remember the half-penny of York, struck by Archbishop Edward Lee with ϴ L at the sides of the head in the reign of Henry VIII. This must be clearly attributed to a later issue, and is probably only a very much clipped half-penny.[4] Colonel Morrieson, however, has a coin weighing 2·25 grs. of the size of a farthing. It is exactly like a small half-penny in design, and is the only coin I have seen that I can call a farthing of Henry VII.

In the foregoing descriptions I have not attempted to refer to every individual coin, but have tried as far as possible to confine myself to types. There are many pieces which have peculiarities only present on single examples which, however interesting in themselves and rare, do not help us in a general view of the sequence of types. Thus I have omitted any detailed description of a unique groat of the escallop issue, but have paid some attention to broken punches found on another denomination. Owners of unusual coins are sure to note that I have left out many descriptions of their treasures, and this must be one of my excuses.

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[4] I have now seen both these coins. The first is not an English coin, if it is not a contemporary forgery. The second is, as I suggested above, a clipped half-penny.

Another excuse for perhaps more or less vital omissions is the present state of affairs, and the resulting impossibility of viewing coins in private hands and in many public places. I may possibly be able to rectify some of these omissions before the paper reaches our Fellows in the CHRONICLE. I shall use my best endeavours to do so.

Before leaving the coins themselves, just one word should be said about the shillings [Pl. XIII. 23]. Mr. Symonds has shown that they were unofficial coins, as none of the orders include them. They weigh about 144 grs. each and do not vary much from this weight. They are precisely like the profile groats with the mint-mark lis, except that the cross ends are floreate. They have the mint-mark lis on both sides. The varieties are chiefly in the king's name; HENRICVS and HENRIC both appear, the numeral VII or the word SEPTIM occur on some, not on others. There is also the same variation as is found on the groats in another word, TDIVTORE or TDIVTOE. Except for the want of authority they are coins, and I think they were really used as such.

So far the effect of the previous, more or less minute, descriptions of the series of coins already given has been to show how they agree with the various orders for them as described in the documents now so often quoted. There are, however, other directions given of which so far no notice has been taken. There is the order that a privy mark should be placed on each coin. This is no new direction first ordered by Henry VII, but was in practice for long years before. Hitherto we have been accustomed to look on what we now call

the mint-mark as the privy mark ordered in the indentures. Such may have been the case in reference to some of these marks, but the first question that arises against this general view is, What about the coins without a mint-mark, many of which are noted in the preceding descriptions?—Obviously, unless the directions were flatly disobeyed, the mint-mark cannot be regarded as the sole privy mark, and unless we are in a position to recognize now what the mint authorities then made plain, we shall not be in a position to understand the second direction given, viz. there shall be a trial of the pyx every three months. The quarterly trial of the pyx ordered under Henry VII was again no new direction under this monarch.

Ruding tells us it was first ordered by Edward III, that gradually it became inoperative, and that in Henry VI's time infrequent trials were held at intervals of two or three years, and that Edward IV again ordered the quarterly trials. I imagine if most of us were asked our opinion we should have answered that the trials then were annual, as they now are. The relationship of a privy mark to the trial of the pyx, nowadays a matter of placing the date on the coin, is a simple affair which tells the jurors of the pyx and ourselves all we want to know concerning date of issue. As regards the place of striking, all, I believe, that are now considered branches of the Royal Mint add another privy mark when the coin is struck outside the mint in London. The H over the date on bronze coins struck in Birmingham, and the various initials of the Dominion branches on the gold coinage, are modern examples. The initials under the king's bust on silver coins of William III give us rather earlier

examples of the same sort. Going back to our series of Henry VII, and earlier, the names of the towns of mintage serve the same purpose of privy marks, though then each mint was a separate business concern. They must all, however, have been under the order for the trial of the pyx, as otherwise there could have been no protection for the London-made coins. I may again ask, therefore, What was the privy mark? I think the correct answer to the question is: Anything on a coin which would show a difference from those which went before, recognizable by the mint authorities, and by the jurors of the pyx, but certainly not by the general public. To give away the privy marks would be simply to play into the hands of forgers in those days when dies were hand-made and easily copied. Now we have on the coinage of Henry VII, more particularly on the common series of arched crown and profile groats, a large number of differential marks: 1, the mint-mark; 2, the stops; 3, the plan of placing the stops; 4, peculiar letters, e.g. Ɛ and M of the escallop period, Ꝗ of a somewhat later period; 5, the intentional omission of the tressure on some of the York half-groats, and the spelling hЄ'RIC. The list no doubt could be, and will be, largely added to in process of time when we all come to study every smallest feature in detail. One further example of earlier date may be mentioned; shortly after the restoration of Edward IV every single groat I have ever seen—it must be thousands—has the A in ANGL, and the same letter in TAS, and these only, chevron barred until one reaches his last issue, where a few rare groats have all the chevron-barred A. This evidently was a privy mark, and it was small

enough to escape the eye of those for whom it was not intended, as I believe it was not described till quite modern times. The same letter was again used in the same sort of way on the earlier coins of Henry VII. Now with all these curious marks are we in a position even to guess at an arrangement by which we can recognize on the coins sufficient to guide us as to the quarterly alteration necessary for the trial of the pyx? The attempt can only be made with the groats, and of those the arched crown varieties, and to a less extent the profile groats, give us sufficient ground for the speculation. The arched crown series gives us eleven mint-marks in accurate sequence. Each mint-mark has two sets of stops, and each is united with the mint-mark on either side of it. We know all these mules. The arched crown coinage ceased *circa* 1503; I cannot be sure when it began—possibly in 1492, the date of the second indenture, probably before. If this were the case we should have exactly eleven mint-marks for eleven years, one for each year. Some arrangement of this sort is apparent. The first coin of the year would be a mule with a new mint-mark combined with the previous mint-mark. The next, a true coin, with the same mint-mark and stops on both sides. The third and fourth, true coins as regards the mint-mark, but with varied or muled stops. These would give us the four quarterly varieties. Let us take a concrete example in the leopard's head mark. No. 1 would be *obv.* leopard's head with crosses as stops, *rev.* pansy without stops. No. 2, leopard's head both sides, crosses as stops. No. 3, leopard's head both sides, crosses as stops one side, no stops the other side. No. 4, leopard's head both sides, no stops. The next

mint-mark, the lis issuant from half-rose, would begin the series once again with a muled coin bearing the leopard's head. The order of issue in which I have placed these four varieties is purely tentative. The series may have commenced with a true coin; this would leave the sequence quite unaltered. All I am concerned to show here is that four definite varieties of these groats exist, and we know most of them, though the series is not quite complete for every mint-mark. When two series of stops ceased to be used, and crosses were used on all the coins, we get two different crowns on the greyhound and crosslet coins, and two different alphabets. These doubtless served the same purpose.

With the profile groats we only know four mint-marks, the greyhound, lis, crosslet, and pheon. There should be a rose which occurs on half-groats and half-angels. This coinage ran from 1503 to 1509. Mules are known of three out of the four marks. I have been unable to note anything of marked difference in alphabets, but the cross stops appear to show two arrangements, (*a*) with one cross, and (*b*) with two crosses between the words. This, then, would give the necessary number of varieties for a quarterly arrangement. It is unfortunate that we can only use the series of groats in this way. The angels certainly conform to the plan so far as we know them, and give us some positive evidence in the coins of late issue with rosette stops. With the other coins there is no disagreement with this view, but they do not occur in sufficient quantities to allow of an accurate opinion being given upon them.

With this theory in mind, novel as it may seem, let

us roughly attempt to give dates to the mint-marks. 1503 gives us the change from the old to the new style; accordingly the cross crosslet would be the end of the old issue, and 1502 might be given as the date of its birth. Then one year back for each mark up to the regular cinquefoil would bring us back seven years to 1495. The regular cinquefoil had, however, three sets of stops, so that perhaps two years may be allowed for its run. We have thus two mint-marks left, the escallop and the heraldic cinquefoil, and one arched crown coin without mint-mark. These two mint-marked periods present more variation than can be found on any of the later ones, and these might be used to fill in various quarterly issues.

While on the subject of dates, I should like to draw particular attention to the year 1489. It was in this year that both the indentures for the sovereign and the Durham sovereign type penny were signed. The two new coins, be it noted, were of the same design, a new one.

The sovereign with the mint-mark cross fitchée would give the date to the other coins with the same mark, viz. the open crown groat, the open crown London penny, and its half. The pellet stops on some of the groats would also bring in the early Canterbury half-groat and the sovereign type penny of the earliest form of York. This would therefore make this year, and not 1492, the first to show a definite issue of what we call second-coinage pieces. As the coinage as a whole was only gradually altered, the groats came later, and then the angels later still.

Before concluding let me add one more word on the value of little things as aids to classification. The

stops are invaluable, and have enabled me, I hope successfully, to show the sequence of the pence. Broken letter punches pointed the way in part to the arrangement of the stopless half-groats of Canterbury. A combination of these little features leads to practical certainty; and, finally, the quarterly trials of the pyx account for a very large number of varieties which previously seemed to be due to accident rather than design.

Since the above was read, I have been glancing over old pages of the CHRONICLE with a view to adding further particulars. Mr. Crowther wrote two papers on the groats, one in 1887 and the other in 1889. His views were well known to me. Mr. Packe, an old friend of mine, contributed a paper in 1891, the contents of which I had entirely forgotten. In re-reading it I must duly acknowledge that many of the opinions now expressed were embodied in that paper. Some of them might almost have been copied from it. Such, however, was not the case, as Mr. Packe's paper had passed entirely from my memory.

In still earlier years, Sir John Evans gave us a full account of a find of gold angels and half-angels recovered at St. Albans, which was most useful in drawing conclusions as to the gold issues.

In order effectively to illustrate the views put forward in the paper, a large number of plates have been allowed me by the kind discretion of the Editors of the CHRONICLE. To fill these adequately I have had to draw largely on coins belonging to friends. Major Carlyon-Britton lent me a large number from his

collection of gold coins of this period. Mr. Walters and Colonel Morrieson have also helped me, and so has Mr. S. M. Spink. Finally, Mr. G. F. Hill placed at my disposal a large number of casts chiefly from the coins of the collection of the late Sir John Evans. I am duly grateful for these favours, without which during these times it would have been impossible to show so many important links. With perhaps half a dozen exceptions all the silver coins shown are in my own collection.

L. A. LAWRENCE.

TABLE OF GROATS SHOWING THE MINT-MARKS AND MULES BOTH OF THESE AND OF THE STOPS.

The numbers in the top line refer to the mint-marks with corresponding numbers in first column.

Obverses / *Reverses*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	No mark	Ro
1. Sun and rose	...	..	...	...	...	...	...	..	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...
2. Lis and rose	×	×	×	...	...	...	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3. Rose	..	...	×	...	×	...	...	..	...	...	...	...	...	...	..	...	..	...	...	...	...	...	...	...	...	...
4. Cross fitchée	...	..	...	...	×	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...
5. No mark	...	...	...	...	×	...	.	...	...	...	...	...	..	..	...	...	...	...	...	...	...	...	...	...	...	...
6. Heraldic cinquefoil, trefoils	...	...	...	...	×	×	×	...	×	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...
7. Heraldic cinquefoil, rosettes	...	...	...	...	...	×	×	×	×	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8. Escallop, trefoils	...	...	...	...	...	...	...	×	×	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9. Escallop, rosettes	...	...	...	..	...	×	×	×	×	×	...	...	...	...	...	...	..	...	...	...	..	...	...	...	...	...
10. Regular cinquefoil, rosettes	...	...	...	...	...	...	...	...	...	×	..	×	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11 Regular cinquefoil, no stops	...	...	...	...	...	...	...	...	...	...	×	×	× ?	...	...	...	...	...	...	...	...	...	...	...	...	...
12. Regular cinquefoil, crosses	...	...	...	...	...	...	...	...	...	...	...	×	...	×	...	...	...	...	...	...	...	...	...	...	...	...
13. Pansy, no stops	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14 Pansy, crosses	...	...	...	...	...	...	...	..	...	...	...	...	...	×	×	×	...	...	...	...	...	...	...	...	...	...
15. Leopard's head, no stops	...	...	...	...	...	...	...	...	...	...	...	...	...	×	...	...	...	×	...	...	...	...	...	...	...	...
16. Leopard's head, crosses	...	..	...	...	...	...	...	..	...	...	...	...	...	×	...	×	...	×	...	...	...	...	...	...	...	...
17. Lis on half-rose, no stops	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	×	...	×	...	...	...	...	...	...	...	...
18. Lis on half-rose, crosses	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	×	×	...	×	...	...	...	...	...	...
19. Anchor, no stops	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	×	×	×	...	...	...	...	...
20. Anchor, crosses	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	×	×	×	×	...	...	...	...	...
21. Greyhound's head, double arched crown	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	×	×	×	×	...	...	...	×
22. Greyhound's head, single arched crown	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	×	...	...	...	...	...
23. Cross crosslet, double arched crown	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	×	...	...	...	...
24. Cross crosslet, single arched crown	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	×	...	×	...	...
25. No mark	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	×	...	...	...	...	...
26. Rose	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

EXPLANATION OF THE PLATES.

Plate VII.

1. Open crown groat, mint-mark lis and rose, saltire stops.
2. Open crown groat, mint-mark showing sun (?) on sinister side.
3. Open crown groat, mint-mark rose, trefoil stops, *rev.* no mint-mark.
4. Open crown groat, mint-mark lis, pellet stops, lis after LONDON.
5. Open crown groat, mint-mark cross fitchée.
6. Arched crown groat, with large portcullis in the centre of the *rev.*
7. Arched crown groat, no mint-mark, trefoil stops on *obv.*
8. Arched crown groat, heraldic cinquefoil, *rev.* no mint-mark.
9. Arched crown groat, heraldic cinquefoil both sides, trefoil stops.
10. Arched crown groat, heraldic cinquefoil, rosette stops both sides E's and M's.
11. Arched crown groat, same mark, muled stops.
12. Arched crown groat, muled mint-marks and stops.

Plate VIII.

1. Arched crown groat, mint-mark escallop, a new variety with annulet stops on the *rev.* and a mullet before CIVI.
2. Arched crown groat, mint-mark escallop, trefoil stops on *rev.*
3. Arched crown groat, muled mint-marks, as are 4, 5, 6, 7. The *rev.* of the last has the outer and inner legends misplaced.
8. Arched crown groat, mint-marks greyhound's head and rose.
9. Arched crown groat, mint-marks cross crosslet and greyhound's head.
10. Arched crown groat, mint-mark cross crosslet with single arch to the crown.
11. Arched crown groat, mint-mark cross crosslet with double-arched crown.
12. Profile groat, mint-mark cross crosslet with erased tressure (?).

Plate IX.

1 to 5 show the varieties of mint-marks and mules and legends on the fine-work profile groats.

6. Profile groat, mint-mark cross crosslet, showing the coarser work of the common varieties.

7, 8, 9. Angels of the first type, mint-marks sun and rose, no mark and heraldic cinquefoil.

10. Angel of the second type, mint-mark escallop with the IhΘ TVTΘM, &c., legend.
11. Angel with muled mint-marks, escallop and regular cinquefoil.
12. Angel, mint-mark greyhound's head, with saltire stops.

PLATE X.

1. Angel, mint-mark greyhound's head, muled stops, rosettes, and saltires.
2. Angel, mint-mark cross crosslet, with rosette stops both sides.
3. Angel with double mint-marks, cross crosslet and pheon on both sides.
4. Angel, mint-mark pheon on *obv.*, and both marks on *rev.*
   Nos. 1, 2, 3, 4 should all be placed to the coinage of 1503–4.

5, 6, 7, 8 show angelets of the three issues and the mules. Note the ✕✤✕ ornament on the *rev.* of No. 7.

9. Sovereign of the first type, mint-mark cross fitchée.
10. The corresponding ryal or half-sovereign.

PLATE XI.

1. Sovereign of the second type, mint-mark heraldic cinquefoil.
2. Sovereign of the third type, mint-mark dragon.
3. Sovereign of the fourth type, mint-marks, *obv.* lis, *rev.* dragon; note the ornament ✕✤✕.
4. Sovereign of the fifth type, mint-marks, *obv.* lis, *rev.* cross crosslet, hitherto placed to Henry VIII.
5. Half-groat of London with true open crown, mint-mark lis and rose.
6. Half-groat of London with arched crown, mint-mark escallop.
7. Half-groat of London with arched crown, mint-mark lis, trefoil stops.

PLATE XII.

1. Half-groat of London with arched crown, rosette stops.
2. Half-groat of London, broken tressure, low crown, rosette stops.

3 and 4. Corresponding half-groats of York.

5. No tressure half-groat of York, Gothic letters.
6. No tressure half-groat of York, plain letters.
7. Tressure half-groat of York, Gothic letters.
8. Tressure half-groat of York, showing peculiar A.
9. Tressure half-groat of York, showing peculiar A, no keys.

10 to 14. The series of half-groats of Canterbury with open and arched crowns and the various stops.

15. Profile half-groat of London, without numeral, mint-mark lis.
16. Profile half-groat of London, with numeral, mint-mark lis.

17. Profile half-groat of London, hEnRIC, with peculiar A, mint-mark martlet.
18. Profile half-groat of London, showing the late cross endings, mint-mark rose.

PLATE XIII.

1 and 2. Open crown pennies of York.
3. Sovereign type penny of York, showing first throne.
4. Sovereign type penny of York, showing second throne.
5. Sovereign type penny of York, showing third throne.
6. Sovereign type penny of York, showing fourth throne.
7. Arched crown penny of Canterbury.
8. Open crown penny of Durham, S on the king's breast for Sherwood.
9. Sovereign type penny with D S (Sherwood).
10. Sovereign type penny with R D (Fox), rosette on arm of throne.
11. Sovereign type penny, with D R (Fox), lis on arm of throne.
12. Sovereign type penny, with D R (Fox), cross on arm of throne.
13. Sovereign type penny of London, mint-mark heraldic cinquefoil.
14, 15, 16. London pennies agreeing with York and Durham in type.
17. London penny showing the fifth throne, hitherto placed to Henry VIII.
18 to 22. London halfpence showing the open crown and the arched crown with one and with two arches.
23. One type of the shilling for comparison with the groat as regards workmanship.

MISCELLANEA.

The Evans Collection of Ancient British Coins.

The daily press has already announced the munificent gift to the Nation offered by Sir Arthur Evans, and accepted by the Trustees of the British Museum on 8th Feb., 1919, of the famous cabinet of British Coins which has so long been associated with the name of his father, Sir John Evans, K.C.B. The British Series is accompanied by the Gaulish and Iberian, as well as by some of the Eastern Celtic issues, added by Sir Arthur himself. The value of the gift is immensely enhanced by the scientific spirit in which it is made, as will be clear from the letter which accompanied it, and which we print for its interest to other collectors. It seems superfluous to add that Sir Arthur by his generosity has earned the lasting gratitude, not merely of the British Museum, but of all genuine students of the subject concerned. We understand that the publication of an official catalogue of the whole of the now unrivalled British Series in the Museum will be one of the immediate tasks to be undertaken by the staff as soon as normal conditions are restored.

3rd February, 1919.

My dear Hill,

After these lean years, during which the British Museum has suffered from Government parsimony more than any National Institution of the kind either among friends or foes, it is right that individuals should do what lies in their power to make up for these deprivations. As a personal contribution towards this end I am handing over to you, unconditionally, my father's unique Collection of Ancient British Coins. To them I have added his Gaulish and Iberian Series.

I may say that as regards the ultimate disposal of his *Ancient British Collection*, my father, realizing the claims that might weigh with me on another side, had left me

absolute discretion. I feel, however, that in presenting the Collection to your Department, I am fulfilling his most intimate wishes. It is moreover a fitting tribute to his memory that it should be permanently connected with the Museum, to the welfare of which, as Trustee, he had so long and so actively devoted himself.

My own researches, indeed, in the past, had partly covered the phase of our early history that this Collection represents, and I have been able to add to it some specimens illustrating Celtic expansion in Eastern Europe. But, apart from preoccupations and interruptions caused by the War, my own work has been drawn into still earlier channels by my Cretan investigations. I cannot therefore any longer hesitate to transfer the Collection to a place where it will be more readily available for other students. I am the more encouraged to hand it over to your own keeping from the high sense of the services which—true to the traditions of the Department of Coins and Medals—you have rendered to Numismatic Science, a branch of research that derives such special value from the precision that it imports into the study of history and art, but which has been strangely neglected in some of our seats of learning.

I have felt, too, that our National Museum had the highest claim to the possession of what in fact is a unique illustration of an interesting chapter of our "island story"—the first satisfactory record of which, largely based on this Collection, was indeed supplied by my father's work on *The Coinage of the Ancient Britons*. How few realize that, a century and a half before the Roman Conquest, the early Belgic invaders had not only brought Britain within the range of classical influences, but had actually introduced a graduated coinage derived from that of Philip of Macedon! No one, certainly, who has not studied the numismatic evidence, can have any idea of the extent to which, with "the felt approach" of Imperial Rome, these influences had developed before the days of the Claudian Conquest. I do not expect that many of those acquainted with Shakespeare's *Cymbeline* realize that such a prince actually existed in Ancient Britain under not very different conditions of palace life and foreign relations, still less that he and his colleagues in the British predecessors of Colchester, St. Albans, and other towns, were striking coins with finely executed Graeco-Roman types and Latin inscriptions. At the present time, indeed, these first advertisements of a British claim to enter the circle of civilized nations may have a certain interest

even for those who are not archaeologists. In the early Belgic issues on British soil, too, they may find a seasonable reminder of the permanence of the geographical ties that bind us to our Continental neighbours, which are still of such vital consequence to us after the lapse of over two millennia.

Believe me,

Very truly yours,

(Signed) ARTHUR EVANS.

George F. Hill, Esq., &c. &c.,
Keeper of the Department
of Coins and Medals in the
British Museum.

NOTICES OF RECENT PUBLICATIONS.

Zur Geschichte von Städten des römischen Kaiserreiches. Epigraphisch-numismatische Studien. I. Heft. Von WILHELM KUBITSCHEK. *Sitzungsberichte d. Kais. Akad. der Wiss. in Wien, Phil.-hist. Klasse,* 177. Bd., 4. Abh. 1916. pp. 118.

THIS first fascicule of Dr. Kubitschek's Studies is characterized by all the minute and various erudition which one has learned to associate with his name. It deals mainly with cities in Syria, Phoenicia, and Palestine. I pick out some of the items of more especially numismatic interest, though there is really nothing that the numismatist can afford to neglect. Under the heading "Neapolis in Samaria" he discusses the city-name *Sergia,*[1] and the disuse of the Latin language under Gallus and Volusianus. He inclines to accept Vaillant's conjecture that the colony was enrolled in the Sergia tribe; Neapolis would then be the last city which we know to have been formally enrolled in a citizen tribe. The revival of the Greek inscription he explains, doubtless rightly, not by the existence of a double community, but by the reversion of the city to precolonial conditions with Greek constitution and Greek language. Under Diospolis and Eleutheropolis he discusses the eras of these cities—a subject the difficulties of which he had already done much to clear up—and incidentally various problems, connected with the use of the Arabian and local eras in this district, which hardly affect the numismatist. Passing over the next section, which is concerned with an emendation of a puzzling passage in

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[1] Dr. Kubitschek quotes me as saying "Sergia ist unerklärt, obwohl Vaillant mit seiner Vermutung, dass die Kolonisten der sergischen Tribus angehörten, im Recht ist", and is naturally puzzled to know how I know that Vaillant is right. But what I wrote in my Catalogue was not "*although* Vaillant is right", but "*unless* Vaillant is right". I am pleased to find that somebody besides myself finds conjunctions the most difficult words to master in a foreign language.

CIL. iii. 90, we come to one on Hadrian in Ascalon. It is well known that certain double dates on coins of Gaza relate to a brief-lived era based on the presence of Hadrian in that city. It is now suggested with extreme probability that the dates Δ = ϛΛC and Є = ZΛC[2] on coins of Ascalon have a similar reference. The next section deals with Gaza as a colony, and shows that the city had this status by, and probably some time before, the time of the composition of St. Jerome's Life of St. Hilarion, i. e. A.D. 392. Ascalon also was a colony in the year A.D. 359, as is proved by a papyrus of that date. In the course of the section on Philippopolis and Sakkaia it is shown that Philippopolis must have been founded in 244, not 247 or 248, as generally supposed. The next section, on Denominations, is a valuable attempt to deal with the difficult problem of distinguishing the denominations of the coins of the cities. (In this connexion the writer discusses my statement—which he shows to lack much foundation—that at Gaza the earlier emperors, before Trajan, are all called merely Σεβαστός; and he calls attention to the crying need for a critical work on the obverse legends of Imperial coins. I can say from experience how useful is the rough list of such legends which has been compiled for use in the British Museum. The work is one which Dr. Kubitschek or Dr. Münsterberg might well undertake.) At Ascalon, for instance, he distinguishes in the pre-Trajanic period an obol (*obv.* head of emperor, *rev.* city-goddess) of 11·91 grs. av., a half-obol (*obv.* head of emperor, *rev.* Phanebalos) of 6·85 grs. av., and a dichalkon (*obv.* bust of city-goddess, *rev.* galley) of 3·35 grs. av. (The names of the denominations are conjectural.) Other series—into the details of which it is impossible to enter here—which he analyses from this point of view are those of Caesarea and Sepphoris. At Caesarea the system of differentiation after Elagabalus becomes obscure. Dr. Kubitschek is doubtless quite right in describing the object supported by the eagle on the later coins of Caesarea as a shield, and not a wreath. As to the mysterious letters F. C. which appear in the title of the colony, he suggests as possible *f(elix) C(ommodiana)*, without, however, rejecting the other solution which I had offered, and which would point to connexion with the *Legio VI ferrata* (called *fidelis*

[2] The correction of my slip in equating ZΛC with A.D. 123/4 instead of A.D. 133/4 is, of course, fully justified.

constans). In the long inscription on the reverse of a coin of Elagabalus of Sepphoris, he suggests very plausibly κ(αὶ) λ(αμπροτάτου) δ(ήμου) Ῥ(ωμαίων) instead of κα(ὶ) δ(ήμου) Ῥ. Incidentally, Dr. Kubitschek asks where certain English writers have got the idea that Vienna was called *Flavia* Vindobona. I have searched and failed to discover; but possibly the error goes back to the old idea that the name Vienna was a corruption of Flaviana (see Zedler's *Universal-Lexicon*, lvi. 32); I doubt whether the error is of English origin.

Under Ptolemais are discussed the coins with the difficult titles which I have explained as *Germanica Stabilis*. Dr. Kubitschek says that the coin illustrated in *Brit. Mus. Cat.*, Pl. 42. 6, is not at Berlin; but the cast of it certainly came from the Berlin Museum, and my notes seem to indicate that it was in the Löbbecke collection. His proposal to interpret the two varieties of inscription as *Divos Claudius Stabilitor Germanicus felix* and *Colonia Claudia Germanica Stabilita* is ingenious and attractive, but the arrangement of the epithets in the former is awkward. In discussing the variations in the titles of various colonies, Dr. Kubitschek says that Edessa, after being called Μαρκ. Ἀντ(ωνινιανὴ) κο(λωνία), loses the title of colony under Macrinus, and recovers it under Elagabalus. But the distinction of the coins of Caracalla and Elagabalus is so difficult that we are hardly justified in accepting any with the title κολ. as of the earlier emperor. As to Nesibi, I think the coin which Mionnet and the Chaix Catalogue cite under Trajan Decius with the title κολ. Νέσιβι may really be of Macrinus. As regards Tyre, he publishes a coin of Philip I which names *leg(io) VI F(errata)*; it may have been veterans from this legion who were used to restore the colony after its period of disgrace under Elagabalus. A brief section on the name Claudia borne by the Syrian Apamea is followed by one on *Coloniae liberae*, which should be consulted in connexion with the coinage of such places as Hippo Diarrhytus and Carthage.

The above disconnected remarks can give no idea of the great mass of information to be found in this brief essay: a mass so compact and yet so heterogeneous, that the author would be well advised to supply at the end of each section summaries of his conclusions, which are sometimes difficult to disentangle. As he has made a great deal of use of certain volumes of the *British Museum Catalogue*, I may perhaps be permitted to close this notice with the personal

reflection that any doubts that I may have entertained as to the desirability of meticulous minuteness of description, and of including as many specimens of similar coins as possible, in fact of interpreting the word "duplicate" in a much stricter sense than it has generally been allowed to bear, have been completely dispelled by the results which Dr. Kubitschek has been able to extract from just such minutiae.

G. F. H.

Aspects of Death and Correlated Aspects of Life in Art, Epigram, and Poetry. By F. Parkes Weber, M.A., M.D. Third Edition, revised and much enlarged. pp. xl + 784. With 145 Illustrations. London: Fisher Unwin and Quaritch. 1918.

Dr. Weber's third edition is getting on for twice the length of his second, which was noticed in the *Chronicle* for 1914 (pp. 269–70). As he has altered his title by the addition of the five words that follow "Death", he now frankly takes all human existence for his subject; for it is difficult to see how he could be accused, on whatever human activity he touches, of going beyond his reference: 'quoniam omnia existentia tendunt ad non esse'. The strictly numismatic portion (Part III) now occupies pp. 468–586, very little more than before; the additions are mainly the modern German attempts at the macabre in medals, with which the numismatist and the public have by now become all too familiar. In the next edition, to which we look forward with confidence, Dr. Weber may perhaps be able to add a note on the *monetae anniversariorum* or *méreaux obituaires*, which were distributed to the clergy of collegiate churches who officiated at anniversary services for the dead, and on the presentation of which to the "distributeur" they received their statutory fees. Ducange (ed. 1845, p. 483) describes one with a crowned A between two fleurs-de-lis, and the inscription MONETA ANNIVERSARIORVM on the *obverse*, and on the *reverse* XII (i.e. 12 deniers) with three fleurs-de-lis and REQVIESCANT IN PACE (cp. J. Neumann, *Kupfer-Münzen*, v. 31335–7, and Fontenay, p. 73). Rouyer also possessed one (*Rev. Num.*, 1849, p. 364), of lead, found in the cemetery of St. Pierre d'Aire (Artois): *obv.* Death's head; *rev.* a bone and a key in saltire between three stars.

The British Museum possesses a specimen of the méreau of 1585 for an *obit solennel*, illustrated by Fontenay, p. 74. There is also a whole class of *jetons de présence* of corporations formed in the various quarters of the Hague to give mutual assistance at funerals, which have some small claim to notice. They are described by Dirks in the *Rev. Num. Belge* for 1859, and seem to belong chiefly to the seventeenth and eighteenth centuries.

G. F. H.

OBITUARY.

SIR HERMANN WEBER.

THE death of Sir Hermann Weber on November 11th, in his ninety-fifth year, removes from the ranks of Greek numismatists a very distinguished and honoured member. This is not the place to describe his career as a pioneer in certain methods of medical treatment, or as a mountain-climber, or even to dwell on the personal characteristics which endeared him to all who came into contact with him. His interest in numismatics was first roused by types referring to ancient medicine, but rapidly extended to Greek coins in general, and resulted in the making of a collection which included not only a large number of rarities of the finest period of art, but many pieces of capital importance for the numismatic specialist. He joined the Numismatic Society in 1883, served on its Council from 1889 to 1906, and was five times Vice-President between 1890 and 1901. He was awarded the Medal of the Society in 1905. His chief written contributions to Numismatics were the following papers in the *Numismatic Chronicle*: "On Some Unpublished or Rare Greek Coins", Ser. III, vol. XII (1892) and vol. XVI (1896); "Coins of Mende", vol. XVIII (1898); "On Finds of Archaic Greek Coins in Lower Egypt", vol. XIX (1899); to which may be added his paper in *Corolla Numismatica* (1906) on Rare or Unpublished Coins in his collection.

But his generosity in giving access to his cabinet to any scholar who chose to apply to him was no less valuable as a contribution to science than the communications which took shape in print.

G. F. H.

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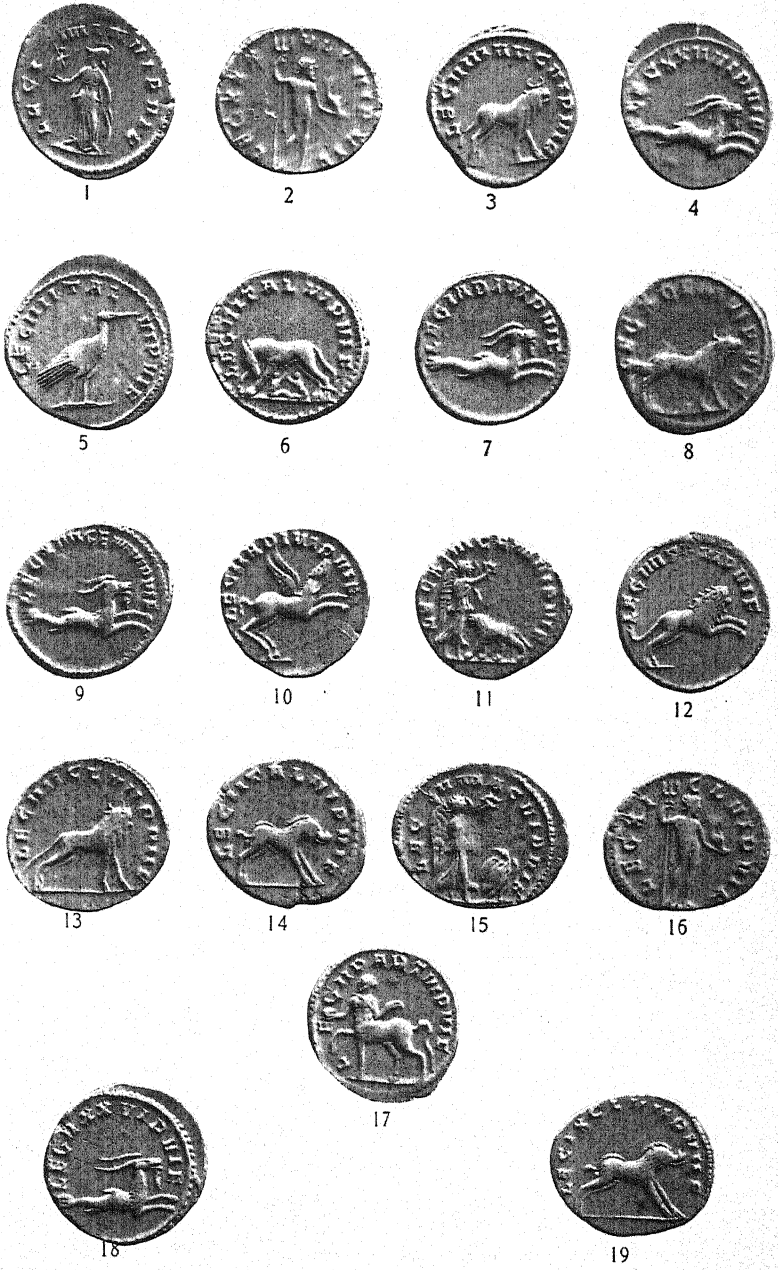
CHIOS. PL. IX. PERIOD XI. γ A.D. 117-150 (?). δ A.D. 150 (?)-268.



REGIMENTAL BADGES OF THE LEGIONS OF GALLIENUS.
1-4 Rhine Frontier. 5, 6 Rhaetia - Noricum. 7-10 Pannonia. 11 Dacia.
12-16 Moesia. 17 Italy. 18-19 Errors.

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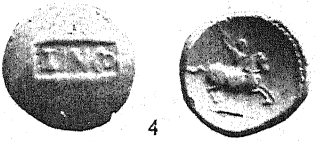
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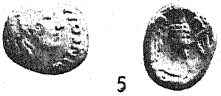
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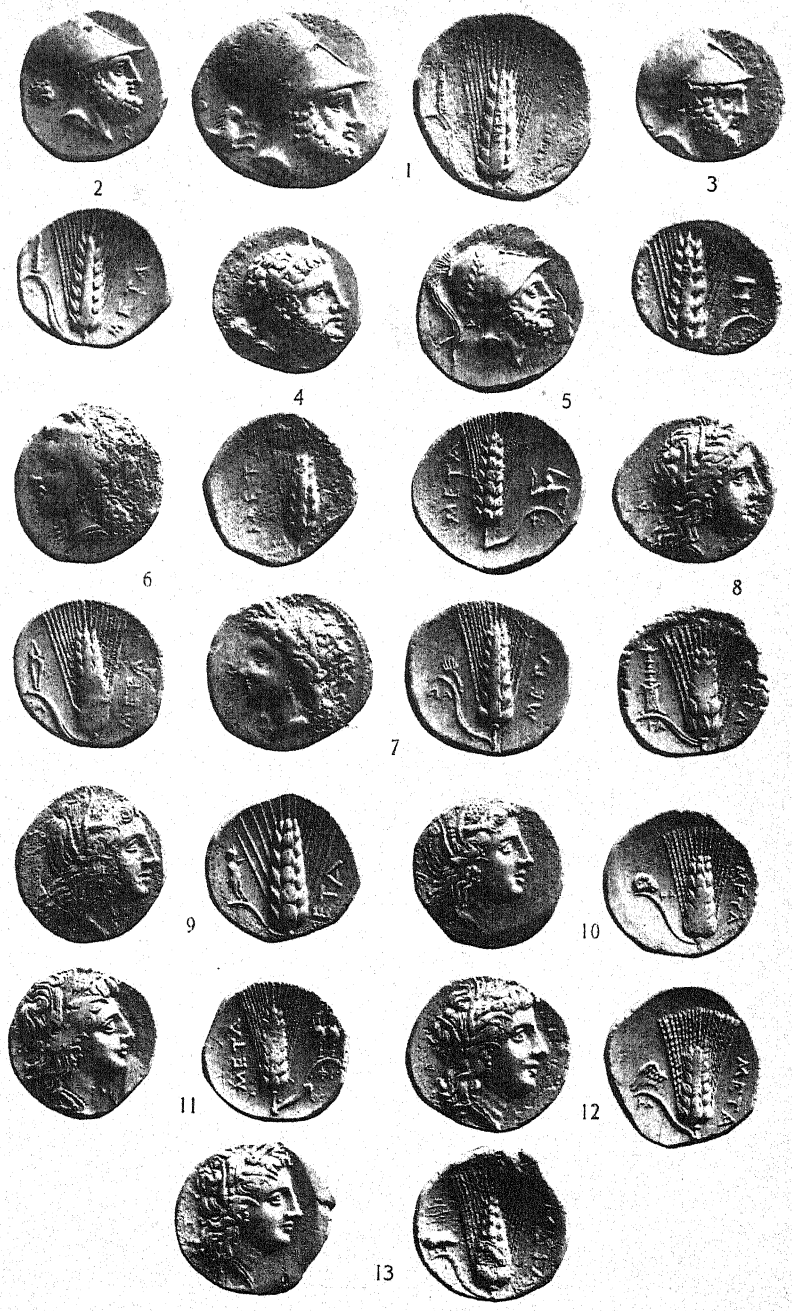

A FIND FROM MAGNA GRAECIA.

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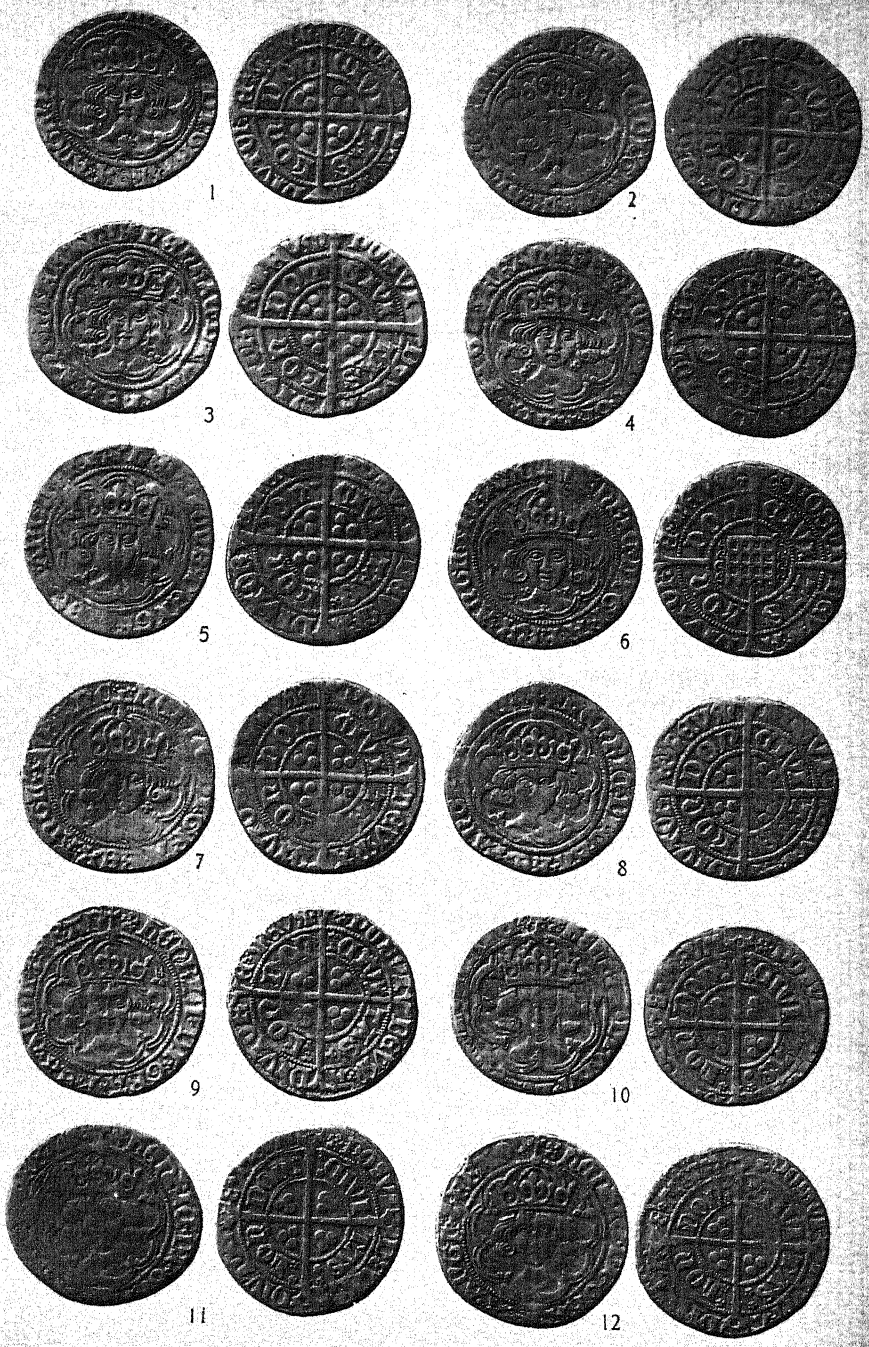
A FIND FROM MAGNA GRAECIA.



HENRY VII. GROATS.

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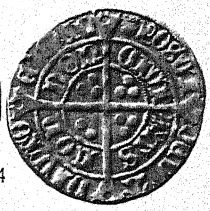
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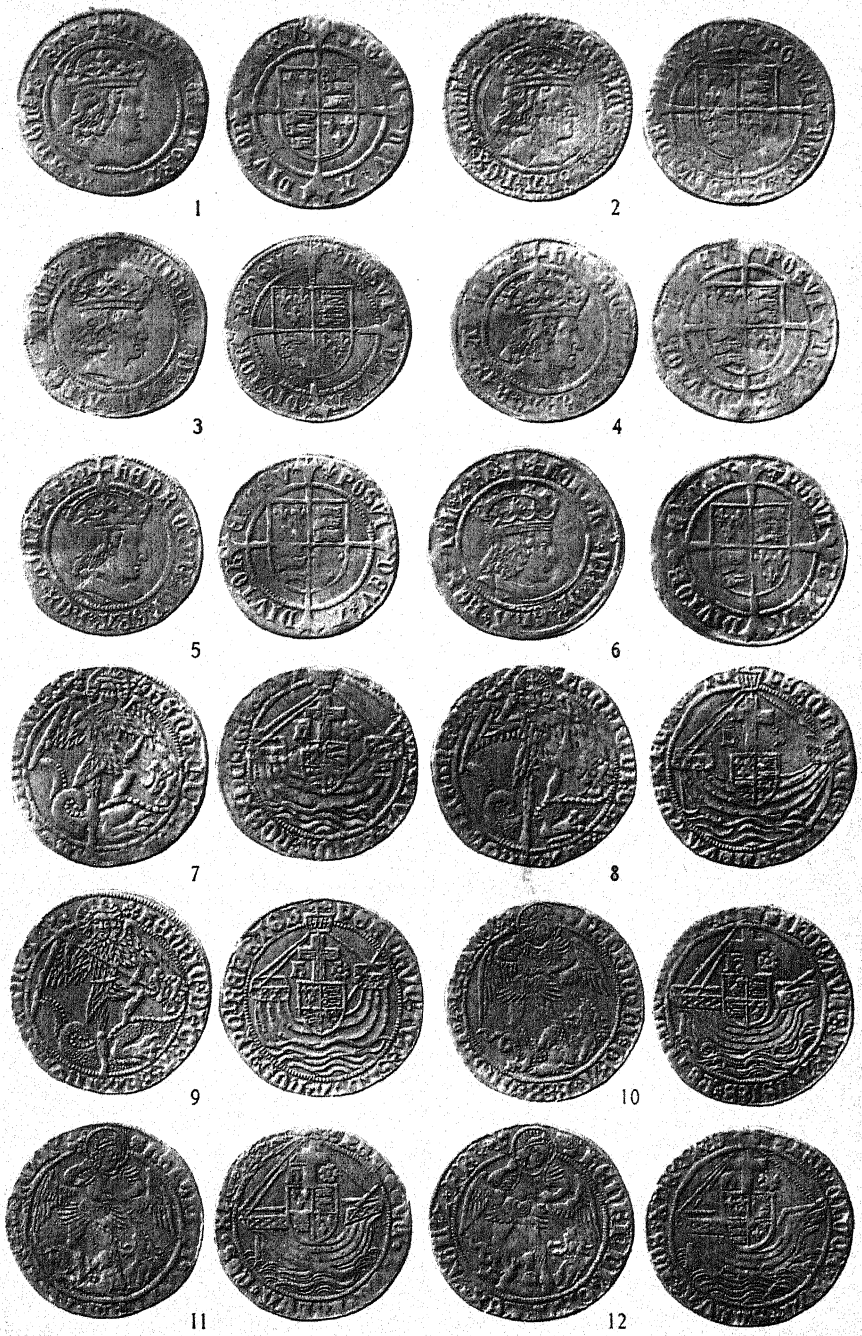
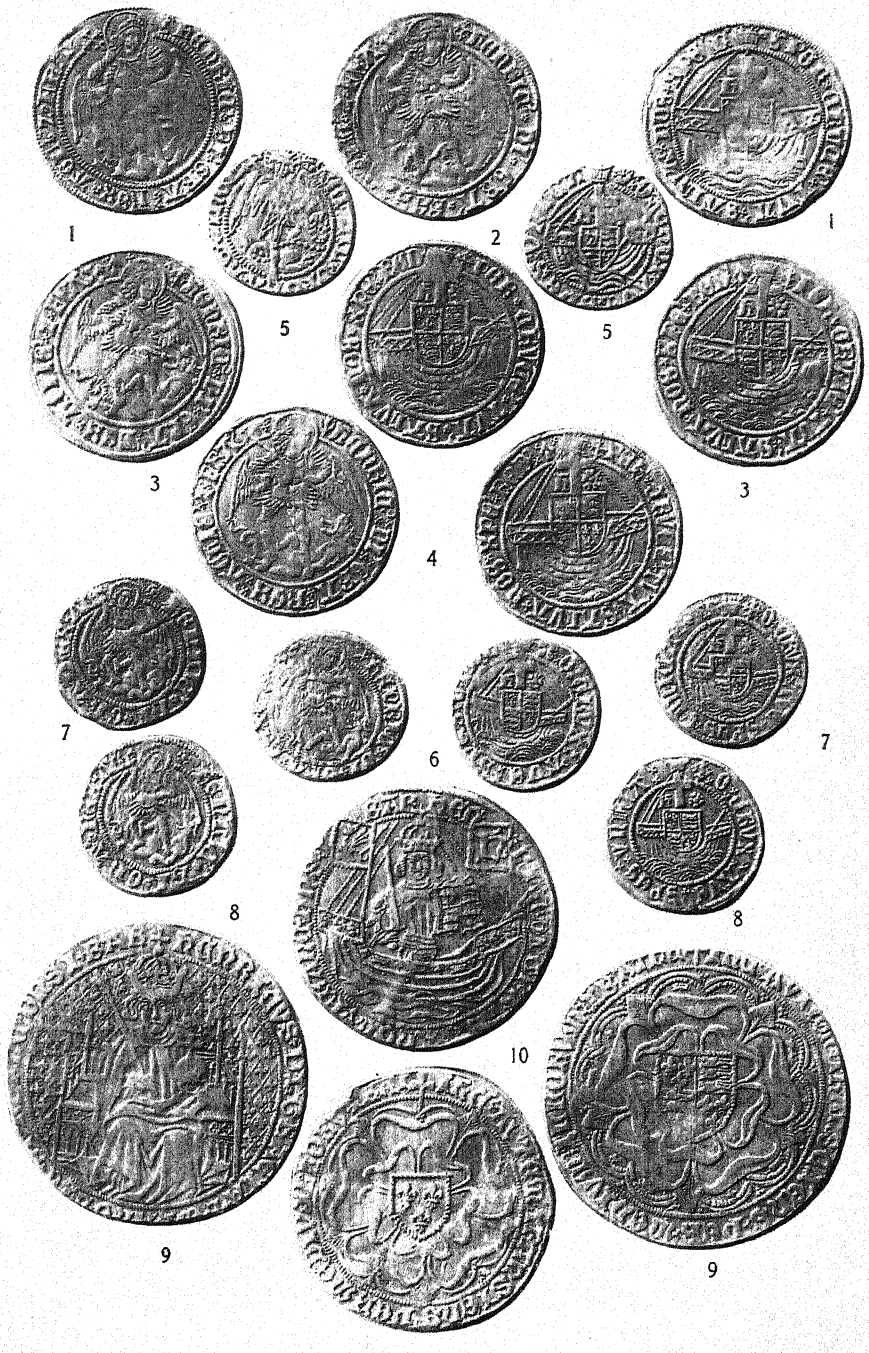
HENRY VII. GROATS.

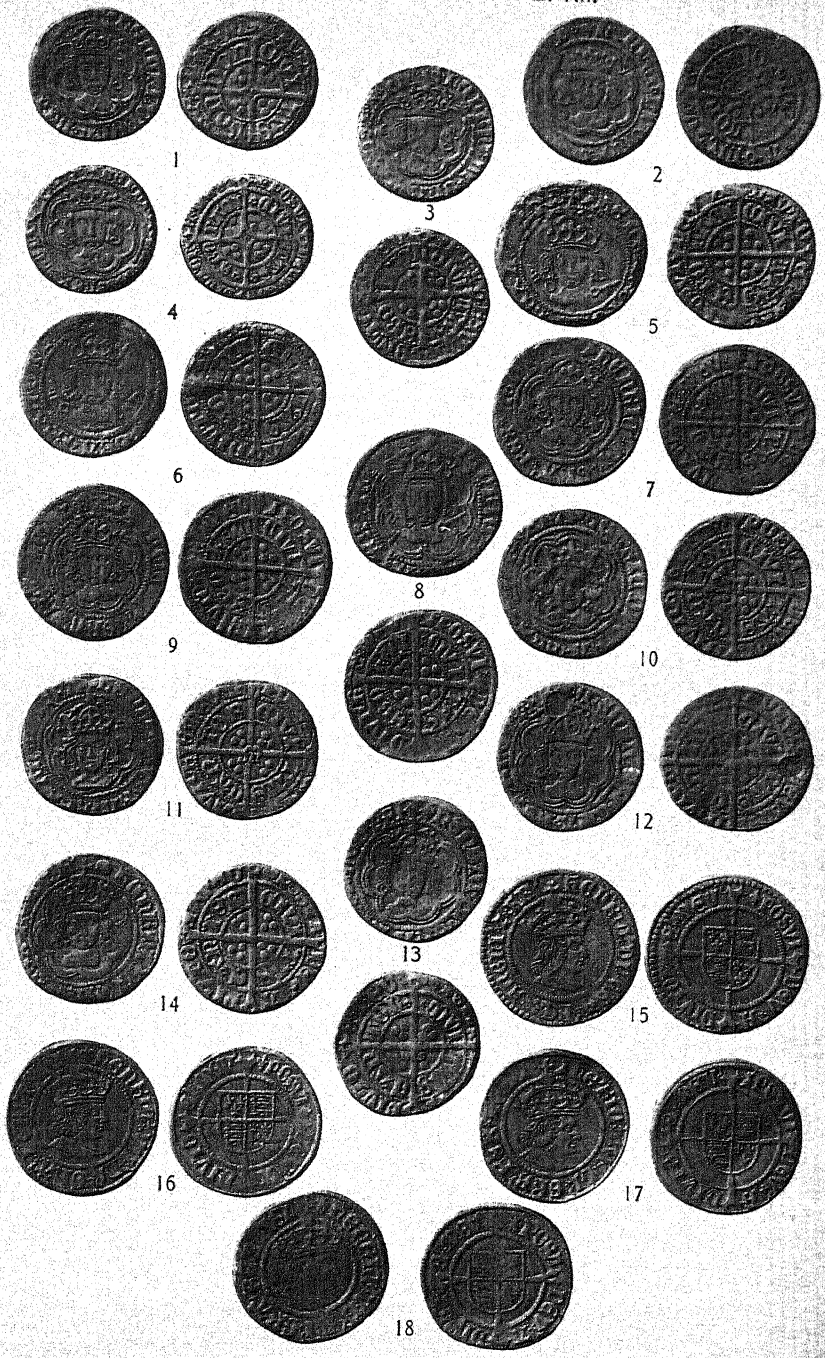


HENRY VII. GROATS & ANGELS.

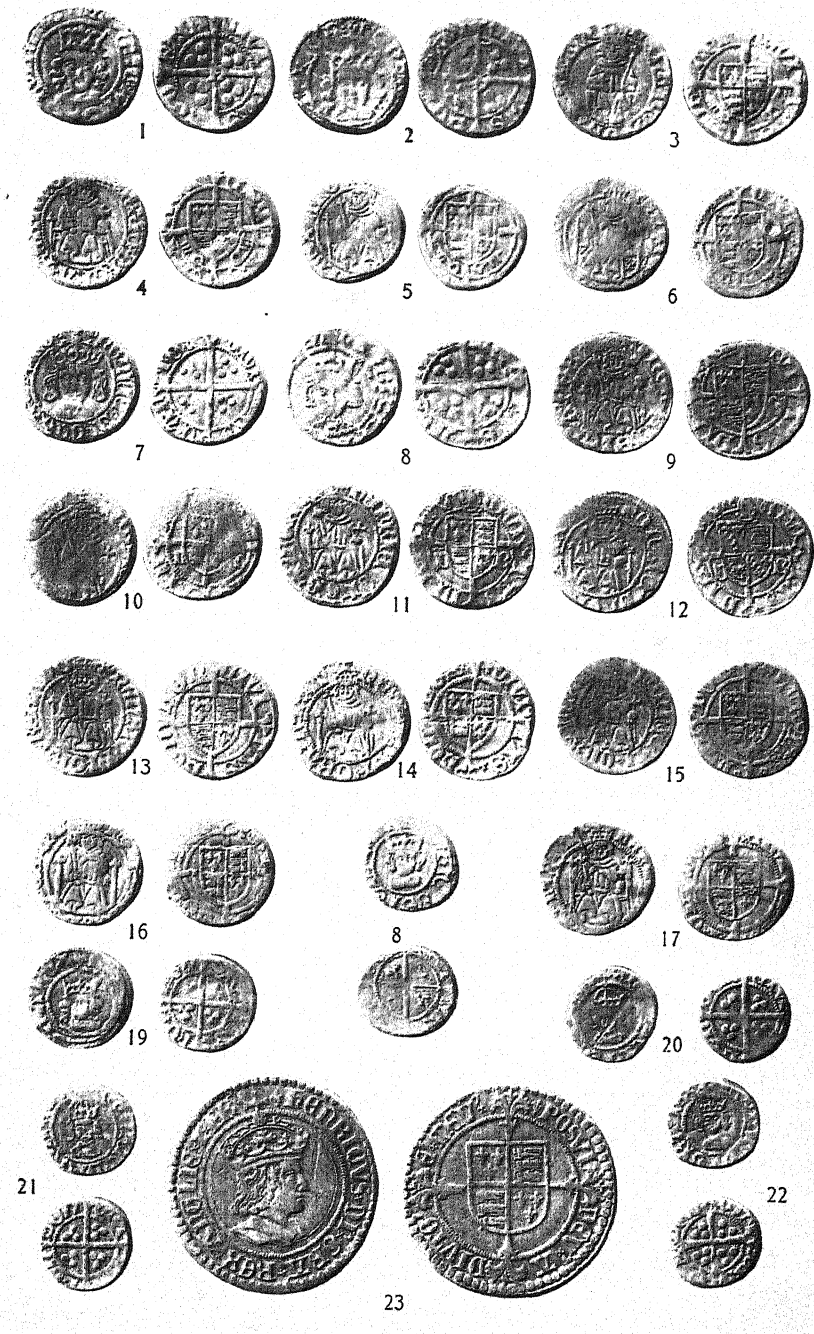


HENRY VII. GOLD.

HENRY VII. SOVEREIGNS & HALF-GROATS.



HENRY VII. HALF-GROATS.



HENRY VII. PENCE, HALF-PENCE & SHILLING.

LIST OF FELLOWS

OF THE

ROYAL

NUMISMATIC SOCIETY

1918

PATRON

HIS MAJESTY THE KING

LIST OF FELLOWS

OF THE

ROYAL NUMISMATIC SOCIETY

1918

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*The sign * indicates that the Fellow has compounded for his annual contribution : † that the Fellow has died during the year.*

ELECTED

1909 ADMIRAL THE MARQUESS OF MILFORD HAVEN, P.C., G.C.B., G.C.V.O., K.C.M.G., A.D.C., F.R.G.S., Kent House, East Cowes, Isle of Wight.

1907 ALLAN, JOHN, ESQ., M.A., M.R.A.S., British Museum, W.C. 1, *Hon. Secretary.*

1907 ALLATINI, ROBERT, ESQ., 18 Holland Park, W. 11.

1884 ANDREWS, R. THORNTON, ESQ., 25 Castle Street, Hertford.

1917 ATKINSON, DONALD, ESQ., B.A., University College, Reading.

1882 †BACKHOUSE, SIR JONATHAN E., BART., The Rookery, Middleton Tyas, R.S.O., Yorks.

1907 BAIRD, REV. ANDREW B., D.D., 247 Colony Street, Winnipeg, Canada.

1909 BALDWIN, MISS A., 404 West 116th Street, New York, U.S.A.

1902 BALDWIN, A. H., ESQ., 4A Duncannon Street, Charing Cross, W.C. 2.

1905 BALDWIN, PERCY J. D., ESQ., 4A Duncannon Street, Charing Cross, W.C. 2.

1898 BANES, ARTHUR ALEXANDER, ESQ., The Red House, Upton, Essex.

1917 BARKER, REV. A. LEIGH, The Vicarage, Sway, Hants.

1917 BARNARD, F. PIERREPONT, ESQ., M.A., D.Litt., F.S.A., Bilsby Hall, Alford, Lincs.

1896 BEARMAN, THOS., ESQ., Melbourne House, 8 Tudor Road, Hackney, E. 9.

ELECTED

1906 BEATTY, W. GEDNEY, ESQ., 265 Central Park West, New York, U.S.A.

1910 BENNET-POË, J. T., ESQ., M.A., 29 Ashley Place, S.W. 1.

1916 BERRY, S. R., ESQ., P.W.D., 3 Distillery Road, Hyderabad, Deccan, India.

1909 BIDDULPH, COLONEL J., Grey Court, Ham, Surrey.

1880 *BIEBER, G. W. EGMONT, ESQ., 4 Fenchurch Avenue, E.C. 3.

1904 BLACKWOOD, LT.-COL. A. PRICE, D.S.O., 52 Queen's Gate Terrace, S.W. 7.

1879 *BLUNDELL, J. H., ESQ., 157 Cheapside, E.C. 4.

1917 BORDONARO, BARON G. CHIARAMONTE, Palazzo Bordonaro, Piazza Municipio, Palermo, Sicily.

1907 BOSANQUET, PROF. R. C., M.A., F.S.A., Institute of Archaeology, 40 Bedford Street N., Liverpool.

1896 †BOULTON, SIR SAMUEL BAGSTER, BART., J.P., D.L., F.R.G.S., Copped Hall, Totteridge, Herts.

1897 BOWCHER, FRANK, ESQ., 35 Fairfax Road, Bedford Park, W. 4.

1906 BOYD, ALFRED C., ESQ., 7 Friday Street, E.C. 4.

1899 BOYLE, COLONEL GERALD, 48 Queen's Gate Terrace, S.W. 7.

1895 BRIGHTON PUBLIC LIBRARY, The Curator, Brighton.

1910 BRITTAN, FREDERICK J., ESQ., 63 Bingham Road, Addiscombe, Croydon.

1908 BROOKE, GEORGE CYRIL, ESQ., B.A., British Museum, W.C. 1.

1905 BROOKE, JOSHUA WATTS, ESQ., Rosslyn, Marlborough, Wilts.

1911 BROWNE, REV. PROF. HENRY J., M.A., 35 Lower Leeson Street, Dublin.

1896 BRUUN, HERR L. E., 101 Gothersgade, Copenhagen, Denmark.

1878 BUCHAN, J. S., ESQ., 17 Barrack Street, Dundee.

1881 BULL, REV. HERBERT A., M.A., J.P., Wellington House, Westgate-on-Sea.

1897 BURN, THE HON'BLE MR. RICHARD, I.C.S., M.R.A.S., c/o Messrs. Grindlay & Co., 54 Parliament Street, S.W. 1.

1881 BURSTAL, EDWARD K., ESQ., M Inst.C.E., 32 Cathcart Road, S.W. 10.

1911 BURTON, FRANK E., ESQ., J.P., South Manor, Ruddington, Notts.

1878 *BUTTERY, W., ESQ. (address not known).

1904 CAHN. DR. JULIUS, Niedenau, 55, Frankfurt-am-Main, Germany.

1886 CALDECOTT, J. B., ESQ., Windermere, Frinton-on-Sea.

1908 CALLEJA SCHEMBRI, REV. CANON H., D.D., 50 Strada Saluto, Valletta, Malta.

ELECTED

1914 CAMERON, MAJOR J. S., Low Wood, Bethersden, Ashford, Kent.

1904 CAMPBELL, W. E. M., ESQ., I.C.S., Pilibhit, United Provinces, India.

1894 CARLYON-BRITTON, MAJOR P. W. P., D.L., J.P., F.S.A., 43 Bedford Square, W.C. 1.

1905 CARTHEW, COLONEL R. J., J.P., Woodbridge Abbey, Suffolk.

1917 CASSAL, DR. R. E., Abertillery, Monmouth.

1914 CICCIO, MONSIGNORE GIUSEPPE DE, 131 Via Stabile, Palermo, Sicily.

1891 *CLAUSON, ALBERT CHARLES, ESQ., Hawkshead House, Hatfield, Herts.

1911 COATES, R. ASSHETON, ESQ., South Kilworth House, Rugby.

1913 *CODRINGTON, HUMPHREY W., ESQ., B.A., M.R.A.S., Crab Mill, Ilmington, Shipston-on-Stour, Gloucestershire.

1886 CODRINGTON, OLIVER, ESQ., M.D., F.S.A., M.R.A.S., "Wootton," 10 Ailsa Road, St. Margaret's on Thames, Middlesex.

1918 COLES, COLONEL A. H., C.M.G., D.S.O., 18 Walpole Street, Chelsea, S.W. 3.

1895 COOPER, JOHN, ESQ., Beckfoot, Longsight, Manchester.

1906 COSSINS, JETHRO A., ESQ., Kingsdon, Forest Road, Moseley, Birmingham.

1902 COVERNTON, J. G., ESQ., M.A., C.I.E., Director of Public Instruction, Poona, India.

1910 CREE, JAMES EDWARD, ESQ., Tusculum, North Berwick.

1886 *CROMPTON-ROBERTS, CHAS. M., ESQ., 52 Mount Street, W. 1.

1914 CROWTHER-BEYNON, V. B., ESQ., M.A., F.S.A., Westfield, Beckenham, Kent.

1914 DALTON, RICHARD, ESQ., Park House, Cotham Park, Bristol.

1884 DAMES, M. LONGWORTH, ESQ., I.C.S. (retd.), M.R.A.S., Crichmere, Edgeborough Road, Guildford.

1900 DATTARI, SIGNOR GIANNINO, Cairo, Egypt.

1902 DAVEY, EDWARD CHARLES, ESQ. (address not known).

1915 DILLON, SIR JOHN FOX, BART., J.P., D.L., Lismullen, Navan, Co. Meath.

1911 DRUCE, HUBERT A., ESQ., 27 Eaton Terrace, S.W. 1.

1905 EGGER, HERR ARMIN, 7 Opernring, Vienna.

1918 EIDLITZ, ROBERT JAMES, ESQ., 995 Madison Avenue, New York, U.S.A.

ELECTED

1907 ELDER, THOMAS L., ESQ., 32 East Twenty-third Street, New York, U.S.A.

1893 ELLIOTT, E. A., ESQ., 16 Belsize Grove, Hampstead, N.W. 3.

1904 ELLISON-MACARTNEY, RT. HON. SIR WILLIAM GREY, P.C., K.C.M.G., Government House, Tasmania.

1888 ENGEL, M. ARTHUR, 20 Route de Malagnou, Geneva.

1872 *EVANS, SIR ARTHUR J., P.S.A., M.A., D.Litt., LL.D., Ph.D., F.R.S., F.B.A., Corr. de l'Inst., Youlbury, near Oxford, *President.*

1892 *EVANS, LADY, M.A., c/o Union of London and Smith's Bank, Berkhamsted, Herts.

1904 *FARQUHAR, MISS HELEN, 11 Belgrave Square, S.W. 1.

1886 FAY, DUDLEY B., ESQ., 287 Beacon Street, Boston, Mass., U.S.A.

1902 FENTIMAN, HARRY, ESQ., Murray House, Murray Road, Ealing Park, W. 5.

1914 FIALA, K. u. K. Regierungsrat Eduard, Palais Cumberland, Vienna.

1910 FISHER LIBRARY, THE, University, Sydney, N.S.W.

1908 FITZWILLIAM MUSEUM, The Curator, Cambridge.

1901 FLETCHER, LIONEL LAWFORD, ESQ., Norwood Lodge, Tupwood, Caterham.

1915 FLORENCE, R. Museo Archeologico of, Italy.

1898 FORRER, L., ESQ., 11 Hammelton Road, Bromley, Kent.

1912 FORSTER, R. H., ESQ., M.A., LL.B., F.S.A., The Chantry, Bovingdon, Herts.

1894 *FOSTER, JOHN ARMSTRONG, ESQ., F.Z.S., Chestwood, near Barnstaple.

1891 *FOX, H. B. EARLE, ESQ., Woolhampton, Berks.

1882 †*FRESHFIELD, EDWIN, ESQ., LL.D., F.S.A., New Bank Buildings, 31 Old Jewry, E.C. 2.

1905 FREY, ALBERT R., ESQ., New York Numismatic Club, P.O. Box 1875, New York City, U.S.A.

1896 *FRY, CLAUDE BASIL, ESQ., Stoke Lodge, Stoke Bishop, Bristol.

1897 *GANS, LEOPOLD, ESQ., 207 Maddison Street, Chicago, U.S.A.

1912 GANTZ, REV. W. L., South Place, Letchworth.

1871 GARDNER, PROF. PERCY, M.A., D.Litt., Litt.D., LL.D., F.S.A., F.B.A., 12 Canterbury Road, Oxford.

ELECTED

1907 GARDNER, WILLOUGHBY, ESQ., F.S.A., Deganwy, North Wales.

1889 GARSIDE, HENRY, ESQ., 46 Queen's Road, Teddington, Middlesex.

1913 GILBERT, WILLIAM, ESQ., 35 Broad Street Avenue, E.C. 2.

1916 GILLIES, WILLIAM, ESQ., 204 West George Street, Glasgow.

1904 †GOLDNEY, FRANCIS BENNETT, ESQ., F.S.A., M.P., Abbots Barton, Canterbury.

1894 GOODACRE, HUGH, ESQ., Ullesthorpe Court, Lutterworth, Leicestershire.

1907 GOUDY, HENRY, ESQ., LL.D., D.C.L., Regius Professor of Civil Law, All Souls College, Oxford.

1904 GRAHAM, T. HENRY BOILEAU, ESQ., Edmund Castle, Carlisle.

1905 GRANT DUFF, SIR EVELYN, K.C.M.G., Earl Soham Grange, Framlingham.

1891 *GRANTLEY, LORD, F.S.A., Red Rice, Andover, Hants.

1865 †GREENWELL, REV. CANON W., M.A., F.R.S., F.S.A., Durham.

1914 GROSE, S. W., ESQ., M.A., 17 Willis Road, Cambridge.

1871 GRUEBER, HERBERT A., ESQ., F.S.A., Bembridge, Isle of Wight.

1910 GUNN, WILLIAM, ESQ., 19 Swan Road, Harrogate.

1916 HAINES, G. C., ESQ., 14 Gwendwr Road, W. 14.

1899 HALL, HENRY PLATT, ESQ., Toravon, Werneth, Oldham.

1898 HANDS, REV. ALFRED W., The Rectory, Nevendon, Wickford, Essex.

1912 HARDING, NEWTON H., ESQ., 110 Pine Avenue, Chicago, U.S.A.

1917 HARRIS, B. WILFRED, ESQ., Lynwood, Boldmere, Erdington, Birmingham.

1904 HARRIS, EDWARD BOSWORTH, ESQ., 5 Sussex Place, N.W. 1.

1904 HARRISON, FREDERICK A., ESQ., Sunnyside, Fourth Avenue, Frinton-on-Sea.

1916 *HART, R. EDWARD, ESQ., Brooklands, Blackburn.

1903 HASLUCK, F. W., ESQ., M.A., The Wilderness, Southgate, N.

1902 HAVERFIELD, PROF. FRANCIS J., M.A., LL.D., D.Litt., F.S.A., F.B.A., Winshields, Headington Hill, Oxford.

1914 HAYES, HERBERT E. E., ESQ., M.R.A.S., Hythe House, Greenhithe, Kent.

1906 HEADLAM, REV. PROF. ARTHUR CAYLEY, D.D., Christ Church, Oxford.

1886 *HENDERSON, JAMES STEWART, ESQ., F.R.G.S., M.R.S.L., M.C.P., 1 Pond Street, Hampstead, N.W. 3.

ELECTED

1900 HEWLETT, LIONEL M., ESQ., Greenbank, Harrow-on-the-Hill, Middlesex.

1903 HIGGINS, FRANK C., ESQ., 5 West 108th Street, New York, U.S.A.

1893 HILBERS, THE VEN. G. C., M.A., V.D., St. Thomas's Rectory, Haverfordwest.

1898 HILL, CHARLES WILSON, ESQ. (address not known).

1893 HILL, GEORGE FRANCIS, ESQ., M.A., F.B.A., *Keeper of Coins*, British Museum, W.C. 1, *Foreign Secretary*.

1883 HOBART, R. H. SMITH, ESQ., 619 Third Street, Brooklyn, New York, U.S.A.

1898 HOCKING, WILLIAM JOHN, ESQ., C.B.E., Royal Mint, E. 1.

1895 HODGE, THOMAS, ESQ., 34–35 New Bond St., W. 1.

1910 HOWORTH, DANIEL F., ESQ., 24 Villiers Street, Ashton-under-Lyne.

1878 HOWORTH, SIR HENRY H., K.C.I.E., D.C.L., F.R.S., F.S.A., 45 Lexham Gardens, W. 8, *Vice-President*.

1883 HUBBARD, WALTER R., ESQ., 6 Broomhill Avenue, Partick, Glasgow.

1885 HÜGEL, BARON F. VON, 13 Vicarage Gate, Kensington, W. 8.

1908 *HUNTINGTON, ARCHER M., ESQ., Honorary President of the American Numismatic Society, Audubon Park, 156th Street, West of Broadway, New York, U.S.A.

1911 HYMAN, COLEMAN P., ESQ., Royal Colonial Institute, Northumberland Avenue, W.C. 2.

1911 JOHNSTON, LEONARD P., ESQ., The Cottage, Warningcamp, Arundel, Sussex.

1911 JONES, FREDERICK WILLIAM, ESQ., 22 Ramshill Road, Scarborough.

1874 *KENYON, R. LLOYD, ESQ., M.A., J.P., D.L., Pradoe, West Felton, Salop.

1914 KERR, ROBERT, ESQ., M.A., Royal Scottish Museum, Edinburgh.

1901 KOZMINSKY, DR. ISIDORE, 20 Queen Street, Kew, near Melbourne, Victoria.

1883 *LAGERBERG, M. ADAM MAGNUS EMANUEL, Chamberlain of H.M. the King of Sweden, Director of the Numismatic Department, Museum, Gothenburg and Rada, Sweden.

1917 LAMB, MISS WINIFRED, Holly Lodge, Campden Hill, W. 8.

ELECTED

1910 LAUGHLIN, DR. W. A., M.A., Box 456, Virginia City, Nevada, U.S.A.

1877 LAWRENCE, F. G., ESQ., Birchfield, Mulgrave Road, Sutton, Surrey.

1885 *LAWRENCE, L. A., ESQ., F.S.A., 44 Belsize Square, N.W. 3.

1883 *LAWRENCE, RICHARD HOE, ESQ., 15 Wall Street, New York, U.S.A.

1871 *LAWSON, ALFRED J., ESQ., Smyrna.

1893 LESLIE-ELLIS, LIEUT.-COL. HENRY, D.L., J.P., F.S.A., F.R.G.S., Magherymore, Wicklow.

1918 LEVIS, HOWARD COPPUCK, ESQ., 40 Egerton Gardens, S.W. 3.

1900 LINCOLN, FREDERICK W., ESQ., 69 New Oxford Street, W.C. 1.

1907 LOCKETT, RICHARD CYRIL, ESQ., F.S.A., Clonterbrook, St. Anne's Road, Aigburth, Liverpool.

1911 LONGMAN, W., ESQ., 27 Norfolk Square, W. 2.

1893 LUND, H. M., ESQ., Waitara, Taranaki, New Zealand.

1903 LYDDON, FREDERICK STICKLAND, ESQ., 5 Beaufort Road, Clifton, Bristol.

1885 *LYELL, ARTHUR HENRY, ESQ., F.S.A., 9 Cranley Gardens, S.W. 7.

1895 MACDONALD, GEORGE, ESQ., C.B., M.A., LL.D., F.B.A., 17 Learmonth Gardens, Edinburgh.

1901 MACFADYEN, FRANK E., ESQ., 11 Sanderson Road, Jesmond, Newcastle-on-Tyne.

1917 MARNO, CAPT. C. V. L., 26 Collingham Gardens, S.W. 5.

1895 MARSH, WM. E., ESQ., Rosendale, 35 Holligrave Road, Bromley, Kent.

1897 MASSY, COL. W. J., 30 Brandenburgh Road, Chiswick, W. 4.

1912 MATTINGLY, HAROLD, ESQ., M.A., British Museum, W.C. 1.

1905 MAVROGORDATO, J., ESQ., 6 Palmeira Court, Hove, Sussex.

1901 MCDOWALL, REV. STEWART A., 5 Kingsgate Street, Winchester.

1905 MCEWEN, HUGH DRUMMOND, ESQ., F.S.A.(Scot.), Custom House, Leith, N.B.

1868 MCLACHLAN, R. W., ESQ., 310 Lansdowne Avenue, Westmount, Montreal, Canada.

1916 MEIGH, ALFRED, ESQ., Ash Hall, Bucknall, Stoke-on-Trent.

1905 MESSENGER, LEOPOLD G. P., ESQ., 151 Brecknock Road, Tufnell Park, N. 19.

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1905 MILLER, HENRY CLAY, ESQ., 35 Broad Street, New York, U.S.A.

1897 MILNE, J. GRAFTON, ESQ., M.A., Bankside, Goldhill, Farnham, Surrey.

1910 MITCHELL LIBRARY, THE, Glasgow, F. T. Barrett, Esq., Librarian.

1898 *MONCKTON, HORACE W., ESQ., F.L.S., F.G.S., 3 Harcourt Buildings, Temple, E.C. 4, and Whitecairn, Wellington College Station, Berks.

1888 MONTAGUE, LIEUT.-COL. L. A. D., Penton, near Crediton, Devon.

1905 MOORE, WILLIAM HENRY, ESQ. (address not known).

1879 MORRIESON, LIEUT.-COL. H. WALTERS, R.A., F.S.A., 42 Beaufort Gardens, S.W. 3, *Hon. Secretary*.

1904 MOULD, RICHARD W., ESQ., Newington Public Library, Walworth Road, S.E. 17.

1916 MYLNE, EVERARD, ESQ., Colet House, Rhyl, N. Wales.

1900 *MYLNE, REV. ROBERT SCOTT, M.A., B.C.L., F.S.A., F.R.S.E., Great Amwell, Herts.

1909 NAGG, STEPHEN K., ESQ., 1621 Master Street, Philadelphia, U.S.A.

1905 NATHAN, SIDNEY, ESQ., M.D., 11 Bolton Gardens, S.W. 10.

1910 NESMITH, THOMAS, ESQ., c/o J. Munro & Co., 7 Rue Scribe, Paris.

1905 NEWALL, HUGH FRANK, ESQ., M.A., D.Sc., F.R.S., Madingley Rise, Cambridge.

1906 NEWBERRY LIBRARY, Chicago, U.S.A.

1915 NEWCASTLE, THE LITERARY AND PHILOSOPHICAL SOCIETY OF, Newcastle-on-Tyne.

1905 *NEWELL, E. T., ESQ., President of the American Numismatic Society, Box 321, Madison Square, New York, U.S.A.

1904 †NORTHUMBERLAND, DUKE OF, K.G., P.C., LL.D., D.C.L., F.R.S., 2 Grosvenor Place, S.W. 1.

1898 OGDEN, W. SHARP, ESQ., F.S.A., Naseby, East End Road, Finchley, N. 3.

1916 OGLE, CHRISTOPHER, ESQ., M.A., The Beeches, Burgh Heath, Surrey.

1897 *O'HAGAN, HENRY OSBORNE, ESQ., Riverhome, Hampton Court.

1882 OMAN, PROF. C. W. C., M.A., LL.D., F.S.A., F.B.A., All Souls College, Oxford, *Vice-President*.

ELECTED

1911 OPPENHEIMER, HENRY, ESQ., 9 Kensington Palace Gardens, W. 8.

1903 PARSONS, H. ALEXANDER, ESQ., "Shaftesbury," Devonshire Road, Honor Oak Park, S.E. 23.

1882 *PECKOVER OF WISBECH, LORD, LL.D., F.S.A., F.L.S., F.R.G.S., J.P., Bank House, Wisbech.

1915 PEARS, CAPTAIN G. B., c/o Cox & Co., Charing Cross, S.W. 1.

1896 PEERS, C. R., ESQ., M.A., F.S.A., 14 Lansdowne Road, Wimbledon, S.W. 19.

1894 PERRY, HENRY, ESQ., Middleton, Plaistow Lane, Bromley, Kent.

1862 †*PERRY, MARTEN, ESQ., M.D., Spalding, Lincolnshire.

1909 PETERSON, F. W. VOYSEY, ESQ., B.C.S. (retd.), 38 Bassett Road, W. 10.

1917 PHIPPS, LIEUT.-COL. P. RAMSAY, F.R.G.S., 17 St. James's Court, S.W. 1.

1888 PINCHES, JOHN HARVEY, ESQ., Whitehill Cottage, Meopham, Kent.

1910 PORTER, PROFESSOR HARVEY, 39 Court Street, Westfield, Mass., U.S.A.

1915 POYSER, A. W., ESQ., M.A., Grammar School, Wisbech.

1903 PRICE, HARRY, ESQ., Arun Bank, Pulborough, Sussex.

1911 PRICHARD, A. H. COOPER-, ESQ., British School, Palazzo Odescalchi, Rome.

1906 RADFORD, A. J. VOOGHT, ESQ., F.S.A., Vacye, College Road, Malvern.

1918 RAFFIN, ALAIN, ESQ., 67 Eardley Crescent, S.W. 5.

1913 RAO, K. ANANTASAMI, Curator of the Government Museum, Bangalore, India.

1890 RAPSON, PROF. E. J., M.A., M.R.A.S., 8 Mortimer Road, Cambridge.

1905 RASHLEIGH, EVELYN W., ESQ., Stoketon, Saltash, Cornwall.

1915 RASQUIN, M. GEORGES, Tanglewood, Bushey Park, Herts.

1909 RAYMOND, WAYTE, ESQ., South Norwalk, Connecticut, U.S.A.

1903 REGAN, W. H., ESQ., 124 Queen's Road, Bayswater, W. 2.

1876 *ROBERTSON, J. DRUMMOND, ESQ., M.A., 17 St. George's Court, Gloucester Road, S.W. 7.

1911 ROBINSON, E. S. G., ESQ., B.A., British Museum, W.C. 1.

1910 ROGERS, REV. EDGAR, M.A., 5 Essex Villas, W. 8.

1911 ROSENHEIM, MAURICE, ESQ., 18 Belsize Park Gardens, N.W. 3.

ELECTED

1903 RUBEN, PAUL, ESQ., Ph.D., Alte Rabenstrasse, 8, Hamburg, Germany.

1904 RUSTAFFJAELL, ROBERT DE, ESQ., The Union Trust Co., Fifth Avenue, Sixtieth Street, New York, U.S.A.

1872 *SALAS, MIGUEL T., ESQ., 247 Florida Street, Buenos Ayres.

1916 SALISBURY, F. S., ESQ., M.A., Limbrick Hall, Harpenden, Herts.

1877 *SANDEMAN, LIEUT.-COL. JOHN GLAS, M.V.O., F.S.A., Whin-Hurst, Hayling Island, Havant, Hants.

1917 SEABY, LIEUT. V. A., R.F.C., Roedean, Imperial Crescent, Doncaster.

1907 *SELTMAN, CHARLES T., ESQ., Kinghoe, Berkhamsted, Herts.

1890 SELTMAN, E. J., ESQ., Kinghoe, Berkhamsted, Herts.

1900 SHACKLES, GEORGE L., ESQ., Wickersley, Brough, E. Yorks.

1908 SHEPHERD, EDWARD, ESQ., 2 Cornwall Road, W. 11.

1913 SHIRLEY-FOX, J. S., ESQ., R.B.A., 5 Rossetti Studios, Flood Street, Chelsea, S.W.

1896 SIMPSON, C. E., ESQ. (address not known).

1893 *SIMS, BRIG.-GENERAL R. F. MANLEY-, ESQ., Government House, Toronto, Canada.

1896 SINHA, KUMVAR KUSHAL PAL, RAIS OF KOTLA, Kotla, Agra, India.

1918 SLIGO, THE MARQUESS OF, F.S.A., F.R.G.S., 7 Upper Belgrave Street, S.W. 1.

1912 SMITH, G. HAMILTON, ESQ., Northside, Leigh Woods, Bristol.

1890 SMITH, W. BERESFORD, ESQ., Kenmore, Vanbrugh Park Road West, Blackheath, S.E. 3.

1905 SNELLING, EDWARD, ESQ., 26 Silver Street, E.C. 2.

1909 SOUTZO, M. MICHEL, 8 Strada Romana, Bucharest.

1894 SPINK, SAMUEL M., ESQ., 17 Piccadilly, W. 1.

1902 STAINER, CHARLES LEWIS, ESQ., 10 South Parks Road, Oxford.

1869 *STREATFEILD, REV. GEORGE SYDNEY, 12 Upper Lattimore Road, St. Albans.

1914 *STREATFEILD, MRS. SYDNEY, 22 Park Street, W. 1.

1910 SUTCLIFFE, ROBERT, ESQ., 21 Market Street, Burnley, Lancs.

1914 SYDENHAM, REV. EDWARD A., The Vicarage, Wolvercote, Oxon.

1885 SYMONDS, HENRY, ESQ., F.S.A., Staplegrove Elm, Taunton.

ELECTED

1896 *TAFFS, H. W., ESQ., 35 Greenholm Road, Eltham, S.E. 9.

1879 TALBOT, LIEUT.-COL. THE HON. MILO GEORGE, Hartham, Corsham, Wilts.

1892 *TAYLOR, R. WRIGHT, ESQ., M.A., LL.B., F.S.A., 8 Stone Buildings, Lincoln's Inn, W.C. 2.

1917 TAYLOR, GLEN A., ESQ., Middleton House, Briton Ferry, Glamorgan.

1887 THAIRLWALL, F. J., ESQ., 12 Upper Park Road, N.W. 3.

1890 THOMAS-STANFORD, CHARLES, ESQ., M.P., M.A., F.S.A., Preston Manor, Brighton.

1896 THOMPSON, SIR HERBERT, BART., 9 Kensington Park Gardens, W. 11.

1896 †THORBURN, HENRY W., ESQ., Cradock Villa, Bishop Auckland.

1918 THORBURN, P., ESQ., Hascombe, Godalming, Surrey.

1903 THORPE, GODFREY F., ESQ., United Service Club, Calcutta, India.

1894 TRIGGS, A. B., ESQ., Bank of New South Wales, Yass, New South Wales.

1887 TROTTER, LIEUT.-COL. SIR HENRY, K.C.M.G., C.B., 18 Eaton Place, S.W. 1.

1912 VAN BUREN, DR. A. W., American Academy, Porta San Pancrazio, Rome.

1916 VANES, REV. J. A., 1 Trinity Road, Bangalore, India.

1899 VLASTO, MICHEL P., ESQ., 12 Allée des Capucines, Marseilles, France.

1892 VOST, LIEUT.-COL. W., I.M.S., 216 Staff Lines, Secunderabad, India.

1905 WACE, A. J. B., ESQ., M.A., Leslie Lodge, Hall Place, St. Albans.

1883 WALKER, R. K., ESQ., M.A., J.P., Watergate, Meath Road, Bray, Ireland.

1897 WALTERS, FRED. A., ESQ., F.S.A., 28 Great Ormonde Street, W.C. 1, and Temple Ewell, Dover.

1911 WARRE, CAPT. FELIX W., M.C., 231A St. James's Court, Buckingham Gate, S.W. 1.

1901 *WATTERS, CHARLES A., ESQ., 152 Princes Road, Liverpool.

1917 WATTS, GERALD A., ESQ., Drumlerry, Londonderry.

1901 WEBB, PERCY H., ESQ., 4 and 5 West Smithfield, E.C. 1, *Hon. Treasurer.*

ELECTED

1885 *WEBER, F. PARKES, ESQ., M.D., F.S.A., 13 Harley Street, W. 1.

1883 †*WEBER, SIR HERMANN, M.D., 10 Grosvenor Street, Grosvenor Square, W. 1.

1884 WEBSTER, W. J., ESQ., 76 Melford Road, Thornton Heath.

1904 WEIGHT, WILLIAM CHARLES, ESQ., Erica, The Broadway, Letchworth.

1905 WEIGHTMAN, FLEET-SURGEON A. E., F.S.A., O.B.E., Junior United Service Club, Charles Street, St. James's, S.W. 1.

1899 WELCH, FRANCIS BERTRAM, ESQ., M.A., Wadham House, Arthog Road, Hale, Cheshire.

1915 WHITEHEAD, R. B., ESQ., I.C.S., M.R.A.S., Amballa, Panjab, India.

1869 *WIGRAM, MRS. LEWIS, The Rookery, Frensham, Surrey.

1908 WILLIAMS, T. HENRY, ESQ., 85 Clarendon Road, S.W. 15.

1910 WILLIAMS, W. I., ESQ., Beech Villa, Nelson, Cardiff.

1881 WILLIAMSON, GEO. C., ESQ., F.R.S.L., Burgh House, Well Walk, Hampstead, N.W. 3.

1906 WILLIAMSON, CAPT. W. H. (address not known).

1904 WINTER, CHARLES, ESQ., Oldfield, Thetford Road, New Malden, Surrey.

1906 WOOD, HOWLAND, ESQ., Curator of the American Numismatic Society, 156th Street, W. of Broadway, New York, U.S.A.

1903 WRIGHT, H. NELSON, ESQ., I.C.S., M.R.A.S., Firwood, Clevedon, Somerset.

1889 YEATES, F. WILLSON, ESQ., 7 Leinster Gardens, W. 2.

1880 YOUNG, ARTHUR W., ESQ., 12 Hyde Park Terrace, W. 2.

1898 YOUNG, JAMES SHELTON, ESQ., Great Camberton, Pershore, Worcestershire.

1900 ZIMMERMANN, REV. JEREMIAH, M.A., D.D., LL.D., 107 South Avenue, Syracuse, New York, U.S.A.

HONORARY FELLOWS

ELECTED

1898 His Majesty Victor Emmanuel III, King of Italy, Palazzo Quirinale, Rome.

1891 Babelon, M. Ernest, Membre de l'Institut, Bibliothèque Nationale, Paris.

1903 Bahrfeldt, General-Major M. von, D.Phil., 9 Humboldtstr., Hildesheim, Germany.

1898 Blanchet, M. J. Adrien, 10 Bd. Émile Augier, Paris.

1898 Dressel, Dr. H., Münzkabinett, Kaiser-Friedrich-Museum, Berlin.

1899 Gabrici, Prof. Dr. Ettore, S. Giuseppe dei Nudi 75, Naples.

1893 Gnecchi, Comm. Francesco, Via Filodrammatici 10, Milan.

1873 Imhoof-Blumer, Dr. F., Winterthur, Switzerland.

1893 Jonghe, M. le Vicomte B. de, Rue du Trône, 60, Brussels.

1878 Kenner, Dr. F. von, K. u. K. Museen, Vienna.

1904 Kubitschek, Prof. J. W., Pichlergasse, 1, Vienna.

1893 Loebbecke, Herr A., Cellerstrasse, 1, Brunswick.

1904 Maurice, M. Jules, 10 Rue Crevaux, Paris.

1899 Pick, Dr. Behrendt, Münzkabinett, Gotha.

1895 Reinach, M. Théodore, 9 Rue Hamelin, Paris.

1891 Svoronos, M. J. N., Conservateur du Cabinet des Médailles, Athens.

MEDALLISTS

OF THE ROYAL NUMISMATIC SOCIETY

ELECTED

1883 Charles Roach Smith, Esq., F.S.A.
1884 Aquila Smith, Esq., M.D., M.R.I.A.
1885 Edward Thomas, Esq., F.R.S.
1886 Major-General Alexander Cunningham, C.S.I., C.I.E.
1887 John Evans, Esq., D.C.L., LL.D., F.R.S., P.S.A.
1888 Dr. F. Imhoof-Blumer, Winterthur.
1889 Professor Percy Gardner, Litt.D., F.S.A.
1890 Monsieur J. P. Six, Amsterdam.
1891 Dr. C. Ludwig Müller, Copenhagen.
1892 Professor R. Stuart Poole, LL.D.
1893 Monsieur W. H. Waddington, Sénateur, Membre de l'Institut, Paris.
1894 Charles Francis Keary, Esq., M.A., F.S.A.
1895 Professor Dr. Theodor Mommsen, Berlin.
1896 Frederic W. Madden, Esq., M.R.A.S.
1897 Dr. Alfred von Sallet, Berlin.
1898 The Rev. Canon W. Greenwell, M.A., F.R.S., F.S.A.
1899 Monsieur Ernest Babelon, Membre de l'Institut, Conservateur des Médailles, Paris.
1900 Professor Stanley Lane-Poole, M.A., Litt.D.
1901 S. E. Baron Wladimir von Tiesenhausen, St. Petersburg.
1902 Arthur J. Evans, Esq., M.A., F.R.S., F.S.A.
1903 Monsieur Gustave Schlumberger, Membre de l'Institut, Paris.
1904 His Majesty Victor Emmanuel III, King of Italy.
1905 Sir Hermann Weber, M.D.
1906 Comm. Francesco Gnecchi, Milan.
1907 Barclay Vincent Head, Esq., D.Litt., D.C.L., Ph.D., Corr. de l'Inst.
1908 Professor Dr. Heinrich Dressel, Berlin.
1909 Herbert A. Grueber, Esq., F.S.A.
1910 Dr. Friedrich Edler von Kenner, Vienna.
1911 Oliver Codrington, Esq., M.D., M.R.A.S., F.S.A.
1912 General-Leutnant Max von Bahrfeldt, Hildesheim.
1913 George Macdonald, Esq., M.A., LL.D.
1914 Jean N. Svoronos, Athens.
1915 George Francis Hill, Esq., M.A.
1916 M. Théodore Reinach, Membre de l'Institut, Paris.
1917 L. A. Lawrence, Esq., F.S.A.
1918. Not awarded.

PROCEEDINGS

OF THE

ROYAL NUMISMATIC SOCIETY.

PROCEEDINGS OF THE ROYAL NUMISMATIC SOCIETY.

SESSION 1917—1918.

October 18, 1917.

F. A. Walters, Esq., F.S.A., Vice-President, in the Chair.

The Minutes of the Meeting of May 17 were read and approved.

Lieut. V. A. Seaby, R.F.C., Dr. R. E. Cassal, Donald Atkinson, Esq., B.A., F. Pierrepont Barnard, Esq., M.A., D.Litt., F.S.A., and Captain C. V. L. Marno were proposed for election.

The following Presents to the Society were announced and laid upon the table, and thanks were ordered to be sent to their donors:

1. The Canadian Antiquarian Journal, Vol. xiii, Pts. 1–4. 2. Rivista Italiana, 1917, Pts. 1 and 2. 3. Bulletins de la Société des Antiquaires de l'Ouest, 1916, Pt. 4. 4. Miss Helen Farquhar: Portraiture of Stuart Monarchs, Pt. vii; *from the Author.* 5. Aarbøger for Nordisk Oldkyndighed, 1915–16. 6. Journal of Hellenic Studies, Vol. xxxvii, Pt. 1. 7. L. Forrer: Dictionary of Medallists, Vol. vi; *from Messrs. Spink and Sons.* 8. Forty-sixth Report of the Deputy Master of the Mint; *from the Deputy Master.* 9. American Journal of Archaeology, Vol. xxi, Pt. 2. 10. Annual of the British School at Athens, Vol. xxi. 11. Revue Numismatique, 1916, Pts. 3 and 4. 12. Journal of the Royal Society of Antiquaries of Ireland, Vol. xlvii, Pt. 1. 13. Proceedings of the Royal Irish Academy,

Vol. xxxiv, Pts. 3–4. 14. Administration Report of the Madras Government Museum, 1916–17.

Mr. Walters exhibited a threepenny piece of Charles I, with *obv.* of Oxford, and *rev.* Aberystwyth type.

Mr. Messenger exhibited a French décime of the First Republic countermarked with a *fleur-de-lys.*

Mr. Lawrence showed nobles of Henry VI of the annulet coinage, Edward IV with mm. crown and an angel of Henry VII mm. escallop, copied from English coins of bad workmanship but good weight and metal. He suggested they were forgeries rather than foreign imitations.

Mr. Garside showed silver 20, 10, and 2 piastre pieces of Egypt 1916.

Mr. Webb showed a fine series of Roman bronze coins to illustrate the art of the Antonine period.

The Rev. R. Scott Mylne read a paper on "Coins found in Greek Temples", in which he gave an account of a visit to Magna Graecia and Sicily, and described coins found there, notably a rare bronze coin of the Bruttii.

NOVEMBER 15, 1917.

SIR ARTHUR EVANS, P.S.A., F.R.S., &c., President, in the Chair.

The Minutes of the Ordinary Meeting of October 18 were read and approved.

Dr. R. E. Cassal, Lieut. V. A. Seaby, R.F.C., Donald Atkinson, Esq., B.A., Captain C. V. L. Marno, and F. Pierrepont Barnard, Esq., M.A., D.Litt., F.S.A., were elected Fellows of the Society.

The following Presents to the Society were announced and laid upon the table, and thanks were ordered to be sent to their donors:

1. Some Alexandrian Coins, by J. Grafton Milne; *from the Author.* 2. American Journal of Archaeology, Vol. xxi,

Pt. 3. 3. Vetus Liber Eliensis; *from the Cambridge Antiquarian Society.* 4. Proceedings of the Cambridge Antiquarian Society, Vol. lxviii. 5. Bulletins de la Société des Antiquaires de l'Ouest, 1917, Pts. 1 and 2.

B. Wilfred Harris, Esq., Glen A. Taylor, Esq., Lt.-Col. P. Ramsay Phipps, Baron Bordonaro, and Gerald A. Watts, Esq., were proposed for election.

Mr. Garside exhibited war tokens of 5 and 10 cents in aluminium of the Chamber of Commerce of Marseilles.

Mr. Sydenham exhibited a series of coins of the "Divus Augustus" type from his own collection and that of Mr. Walters in illustration of his paper.

Sir Arthur Evans exhibited a sestertius of Div. Aug. type of Tiberius with *rev.* Temple with bull and ram.

Rev. E. A. Sydenham read a paper entitled "Divus Augustus", in which he gave a chronological arrangement of the memorial coins of Augustus. This paper is printed in the *Chronicle,* Vol. xvii, pp. 258–78.

DECEMBER 20, 1917.

F. A. WALTERS, Esq., F.S.A., Vice-President, in the Chair.

The Minutes of the Meeting of November 15 were read and approved.

The following Present to the Society was announced, and thanks were ordered to be sent to the donor:

Rivista Italiana di Numismatica, 1917, Pt. 3.

Baron G. Chiaramonte di Bordonaro, Gerald A. Watts, Esq., Glen A. Taylor, Esq., Lt.-Col. P. Ramsay Phipps, and B. Wilfred Harris, Esq. were elected Fellows of the Society.

Mr. G. F. Hill read a paper on the medallist Matteo de' Pasti, in which he gave an account of the artist's career and the chronology of his works. This paper is printed in the *Chronicle,* Vol. xvii, pp. 298–312.

JANUARY 16, 1918.

SIR HENRY HOWORTH, K.C.I.E., F.R.S., &c., Vice-President, in the Chair.

The Minutes of the Meeting of December 20 were read and approved.

The following Present to the Society was announced, and thanks were ordered to be sent to the donor:

J. Tudeer: Elias Brenner, som Numismatiker; *from the Author.*

The Marquess of Sligo was proposed for election as a Fellow of the Society.

Rev. Edgar Rogers exhibited three rare Seleucid coins. Prof. Oman showed a series of legionary denarii in illustration of his paper. Prof. Oman read a paper on the "Legionary Coins of Severus and Gallienus", which is printed in the *Chronicle*, Vol. xviii, pp. 80–96.

FEBRUARY 21, 1918.

SIR HENRY H. HOWORTH, K.C.I.E,, F.R.S., &c., Vice-President, in the Chair.

The Minutes of the Meeting of January 16 were read and approved.

The following Presents to the Society were announced, and laid upon the table, and thanks were ordered to be sent to their donors:

1. The Commemorative Medal in the Service of Germany, by G. F. Hill; *from the Author.* 2. A History of Ancient Coinage, by Prof. Percy Gardner. 3. American Journal of Numismatics, 1916, Pt. 1. 4. American Journal of Archaeology, 1917, No. 4. 5. Rivista Italiana, 1917, Pt. 4.

The Marquess of Sligo was elected a Fellow of the Society.

Mr. Webb exhibited a series of bronze and silver coins of Galba and Vitellius.

Rev. Edgar Rogers showed the Seleucid coins illustrating his paper.

Mr. Rogers read a paper entitled "Three Unpublished Seleucid Coins and their Problems", in which he gave an account of a series of rare or unpublished coins in his collection. He was able to identify a number of mints from the monograms, of which the most important was Scythopolis.

MARCH 21, 1918.

SIR ARTHUR EVANS, P.S.A., F.R.S., &c., President, in the Chair.

The Minutes of the Meeting of February 21 were read and approved.

Mr. Garside showed a Swedish øre of 1917 struck in iron instead of bronze.

Prof. Oman and Rev. E. Rogers showed Seleucid coins to illustrate the art of the period.

Mr. Lawrence showed some coins of the first coinage of Henry VII, viz. a London groat m.m. cross fiché, half groat m.m. rose and lis, penny m.m. uncertain, halfpenny m.m. cross fiché, the only one known; a York penny of Archbishop Rotherham, and a Durham penny of Bishop Shirwood. He also showed the matrix of a seal of the Church of St. John Insulae Missarum.

Colonel H. Walters Morrieson read a paper by Mr. H. Symonds on the "Siege Pieces of Scarborough". Printed in the *Chronicle*, Vol. xviii, pp. 122 f.

Mr. Lawrence read a paper by Mr. Symonds on "Henry VI and the Calais Mint Engravers". Printed Vol. xviii, pp. 117–19.

Mr. Allan read a paper by Mr. Symonds on the "Galley-Halfpence of the Middle Ages". Printed in the *Chronicle*, Vol. xviii, pp. 120–2.

April 18, 1918.

Sir Arthur Evans, P.S.A., F.R.S., &c., President, in the Chair.

The Minutes of the Meeting of March 21 were read and approved.

The following Present to the Society was announced, and laid upon the table, and thanks were ordered to be sent to the donor:

Proceedings of the Society of Antiquaries of Scotland, Vol. li.

The Corpus Nummorum Italicorum, by H.M. the King of Italy, was deposited in the Library on loan by Admiral the Marquess of Milford Haven.

Mr. Messenger showed a third brass of Carausius of an unpublished type. *Rev.* Provid. Auggg. Providentia l. holding globe and spear.

Mr. Walters exhibited three Weymouth half-crowns of Charles I: 1. m.m. boar's head *obv.* *Rev.* Lys. Christo Auspice Regna. 2. *Rev.* Florent concordia Regna. 3. *Rev.* Christo Auspice Regno, rose between words. The *obv.* legends on all read "RX".

Mr. Lawrence described in detail a find of coins of Henry II from Larkhill, near Worcester, about 1850. This paper is printed in Vol. xviii.

May 16, 1918.

Sir Henry H. Howorth, K.C.I.E., &c., Vice-President, in the Chair.

The Minutes of the Meeting of April 18 were read and approved.

Messrs. H. Garside and L. G. P. Messenger were appointed Auditors.

Messrs. Alain Raffin and Robert J. Eidlitz were proposed for election.

The following Presents to the Society were announced,

laid upon the table, and thanks ordered to be sent to their donors:

1. The Equestrian Officials of Trajan and Hadrian: their Careers, with some notes on Hadrian's reforms, by Raymond H. Lacey; *from the Author.* 2. The Dates of Skandagupta and his Successors, by Panna Lal; *from the Author.* 3. Proceedings of Royal Irish Academy, Vol. xxxiv, Sec. C, Nos. 5, 6, and 7. 4. Annual Report of Smithsonian Institute, 1916. 5. Handbook of the Coins of Great Britain and Ireland in the British Museum, by H. A. Grueber; *presented by Miss Farquhar.* 6. Journal of Royal Society of Antiquaries of Ireland, Vol. xlvii, Pt. 2. 7. American Journal of Archaeology, Vol. xxii, No. 1.

Mr. Henry Garside showed specimens of the 1917 coinage of Newfoundland with the m.m. C (Canada).

Mr. W. Sharp Ogden showed a series of Roman brass coins in illustration of the paper.

Mr. Webb read a paper by the late Canon Beanlands on "The Origin of the Sestertius". This paper is printed in Vol. xviii.

JUNE 20, 1918.

ANNUAL GENERAL MEETING.

SIR ARTHUR EVANS, P.S.A., F.R.S., &c., President, in the Chair.

The Minutes of the Annual General Meeting of June 21, 1917, were read and approved.

Messrs. S. W. Grose and E. S. G. Robinson were appointed scrutineers of the Ballot for the election of office-bearers for the following year.

Messrs. Alain Raffin and Robert James Eidlitz were elected Fellows of the Society.

The following Report of the Council was laid before the Society:

"The Council have again the honour to lay before you

their Annual Report on the state of the Royal Numismatic Society.

It is with deep regret that they have to announce the deaths of the following six Fellows of the Society: Rev. Canon Beanlands, M.A., F.S.A., Sir Samuel Bagster Boulton, Bt., J.P., D.L., Rev. E. S. Dewick, M.A., F.S.A., Rev. Dr. W. Greenwell, M.A., F.R.S., Philip G. Laver, Esq., M.R.C.S., the Duke of Northumberland, K.G., P.C., LL.D., D.C.L., F.R.S.

They have also to announce the resignations of the following two Fellows: J. T. Blackett, Esq., Sir Thomas H. Elliott, K.C.B.

On the other hand, they have to announce the election of the following thirteen new Fellows: Donald Atkinson, Esq., B.A., F. Pierrepont Barnard, Esq., D.Litt., Baron G. Chiaramonte di Bordonaro, Dr. R. E. Cassal, Robert J. Eidlitz, Esq., B. Wilfred Harris, Esq., Captain C. V. L. Marno, Lieut.-Col. P. Ramsay Phipps, F.R.G.S., Alain Raffin, Esq., Lieut. V. A. Seaby, R.F.C., the Marquess of Sligo, F.S.A., F.Z.S., F.R.G.S., Glen A. Taylor, Esq., Gerald A. Watts, Esq.

Canon Arthur John Beanlands, M.A., F.S.A., F.R.C.I., died on Sept. 26, 1917, at Wickhurst Manor, Weald, Sevenoaks, after a few days' illness. He was the son of the late Arthur Beanlands, M.A., J.P., of Durham. Since his return from Victoria, British Columbia, he devoted considerable time and energy to the study of Numismatics, and was an enthusiastic collector of Roman coins. He had been a Fellow of the Royal Numismatic Society for rather less than a year, consequently he was known personally to comparatively few of the members. Those who knew Canon Beanlands remember the charm of his personality, and the delight he took in the study of history and antiquity. He undoubtedly possessed considerable originality of thought, and strove to infuse life into relics of the past that too often appear only as dry bones. If time did not permit him to mature some of his theories, he must, nevertheless, be recognized as one of the honest seekers after truth. A

paper by him was read at the May meeting of the Society on 'The Origin of the Sestertius'.

Dr. Philip G. Laver had been a Fellow of the Society since 1898. He was a well-known authority on the Antiquities of Colchester.

The Duke of Northumberland had been a Fellow of the Society since 1904.

The number of Fellows is therefore :

	Ordinary.	Honorary.	Total.
June, 1917	272	16	288
Since elected	13	—	13
	285	16	301
Deceased	6	—	6
Resigned	2	—	2
	277	16	293

The Council have also to announce that in view of War Conditions it was decided not to award the Society's Medal this year."

The Hon. Treasurer's Report, which follows, was then laid before the Meeting:

STATEMENT OF RECEIPTS AND DISBURSE-

FROM JUNE, 1917,

Dr. THE ROYAL NUMISMATIC SOCIETY IN ACCOUNT

	£	s.	d.	£	s.	d.
To cost of Chronicle—						
Printing	314	1	5			
Plates.	41	5	4			
				355	4	9
To Books, &c.					3	3
,, *Lantern Expenses*				2	14	2
,, *Rent, &c.*				41	0	0
,, *Sundry Payments*				10	11	6
				£409	13	8
,, *Balance—*						
General Account	121	19	1			
Research Account	22	13	8			
				144	12	9
				£554	6	5

MENTS OF THE ROYAL NUMISMATIC SOCIETY

TO JUNE, 1918.

WITH PERCY H. WEBB, HON. TREASURER. Cr.

	£	s.	d.	£	s.	d.
By Balance in hand—						
General Account	228	3	10			
Research Account	21	3	8			
				249	7	6
By Subscriptions—						
181 Ordinary Subscriptions (less loss on foreign cheques, &c.)	189	19	11			
8 Entrance Fees	8	8	0			
2 Life Subscriptions	31	10	0			
				229	17	11
By Sales of Chronicles, &c.				46	15	10
,, *Dividends on Investments*				28	5	2
				£554	6	5

Audited and found correct,

LEOPOLD G. P. MESSENGER,
HENRY GARSIDE, } *Hon. Auditors.*

June 10, 1918.

The Reports of the Council and of the Treasurer were adopted on the motion of the President.

Sir Arthur Evans then delivered the following Address:

ADDRESS OF THE PRESIDENT.

Although the activities of the Society in the course of last year have been quite up to the normal standard, I do not on this occasion propose to make more than a summary survey of the materials laid before it. The distractions of War time may be partly my excuse, but perhaps a better plea may be found in the fact that I propose to devote the time thus gained to a more special contribution, the occasion of which is an interesting discovery of coins of Magna Graecia, itself the result of the vicissitudes of the present struggle that have brought our forces to Salonica. A curious sequel to this has moreover been supplied from the collection recently bequeathed to the British Museum by Mr. J. G. Ford.

The papers read before the Society during the past year cover the same wide field. Mr. J. Mavrogordato has continued his careful researches on the chronological arrangement of the coins of Chios. His further contribution comprising his eleventh Period deals, like his tenth, with the Age of Augustus, and with this his series concludes. He has added very useful supplements, including a list of all the Chian Magistrates and their approximate dates. Professor Oman has given an illuminating account of the coinage of Antiochus VIII of Syria—known as Grypus from the excessive prominence of his nose—which gives a key to the progressive downfall of the Seleucidae. His later decadent issues had indeed been so little recognized that they had been attributed till quite recently to his son Antiochus XI.

Mr. S. W. Grose in his "Primitiae Heraclienses" has, with the help of the rich series of coins of the Italian Heraclea in the McClean Collection, made many additions to the names, full or abbreviated, that belong to the dies of that city. His paper contains many minute observations on the shorter signatures, and shows a strong tendency to

doubt the attribution of groups of abbreviated signatures when they appear in different cities to the same artists. Great caution is certainly necessary in these cases. A good deal of Mr. Grose's criticism is directed against suggestions of my own made thirty years since in my "Horsemen of Tarentum". But much new material has appeared in the interval, and, as I pointed out in my paper describing the signature of Evaenetos on a didrachm of Terina, the evidence of the Carosino Hoard in throwing up the date of my Fourth Period at Tarentum has in many respects altered the character of the evidence. Personally, I have not had the opportunity of adjusting all my views to the modifications thus introduced.

One point in Mr. Grose's criticisms is, however, quite unintelligible to me. I had made the suggestion that the signature ΦΙ alternating with ΑΡΙ on a group of Tarentine coins, which I then brought down as late as 334, might represent the same engraver as the Philistion of the Velian dies. But, as I have had occasion to point out, the Carosino Hoard has shown that this group of coins must in fact be brought up some forty years in date, which naturally cuts the ground from my original suggestion. Mr. Grose, however, still writes as if I identified this ΦΙ with the Velian Philistion who worked *ex hypothesi* about 325 B.C., that is some thirty years later than his time. Whatever may be thought of the suggestion that the Tarentine engraver, belonging to another group, who signs ΦΙΛΙΣ was identical with ΦΙΛΙΣΤΙΩΝ, it is at least not barred by chronological considerations. Mr. Grose, however, while denying the validity of the evidence of a connexion between Philistion and the Tarentine and Herakleian engravers, omits to mention some really substantial links pointed out by me years ago.

That Philistion in fact represented the traditions of these mints is shown by some of the most characteristic details of his work. His signature itself, on the band below the crest of the helmet, conforms with the earlier Herakleian practice, The form of the helmet is borrowed from the same source.

and the quadriga with which it is decorated is taken from the Leukippos casque on the tetradrachms of Metapontum. In the symbol of the Dioskuri that he inserts between the initial letters of his signature we may recognize a contemporary Tarentine type, and the force of habit is so strong that he incontinently sets the waves, over which Taras rides, beneath the Velian lion! Such an accumulation of details borrowed from the mints of Tarentum and her sister cities affords more than a presumption as to the monetary school to which Philistion belonged. If artistic evidence of such cogency does not seem to appeal to Mr. Grose I can only express my regret.

In the province of Roman Numismatics Mr. E. A. Sydenham has continued his valuable monographs as to early imperial Roman coinage with a paper entitled "Divus Augustus", in which he supplements in a useful manner the recent work of Sig. Laffranchi. The late Canon Beanlands's interpretation of the monetary system of Augustus as an "experiment in trimetallism" is certainly ingenious, but involves a financial outlook to which those responsible for that system could hardly have risen.

Professor Oman's dissertation on the legionary coins of Severus and Gallienus shows the hand of an historian competent to deal with military as well as numismatic matters. Professor Oman's criticism is fatal to thirteen of Cohen's legionary types ascribed to Gallienus, several of them based on the inaccurate readings of Banduri. He arrives at the remarkable conclusion that the seventeen legionary types left to Severus "are almost identical with the list of earlier Emperors". He shows that the legionary coinage of Severus is confined to the years 257–8–9, and that the reason why the Eastern legions are omitted is that these were then in charge of his father Valerian. But why did Gallienus while commemorating the legions of the Rhine and Danube omit those of Britain—II Augusta, VI Victrix, and XX Valeria Victrix—as well as the VII Gemina of Spain? Professor Oman admits that he is unable to give a wholly satisfactory answer to this question, though he lays stress

on the fact that only the Rhenish and Danubian legions seem to have been actually engaged at this time in considerable campaigns.

The subject of English numismatics has not been neglected by our members during the past year. Mr. J. Shirley-Fox and Mr. H. B. Earle-Fox have provided a summary of their very important recent contributions to our detailed knowledge of the heavy pennies of the first three Edwards issued between the years 1279 and 1350, published by the British Numismatic Society. Minute attention is paid not only to style and lettering, the points of physiognomy, and the character of the drapery, but to the modifications in the form of the crown, and the whole series is reduced to a tabulated system. A valuable synopsis of these results will be seen in Plate X of Vol. xvii.

Fresh materials regarding Henry VI and the Calais mint engravers have been supplied from their patents by Mr. Henry Symonds. They show that this king introduced a new system of payment by piece-work for the graving of his dies in his Calais mint, and Mr. Symonds has been able to quote a series of documents giving the prices paid to the gravers on various occasions, together with some curious information as to the amount of bullion coined.

The object of Mr. G. F. Hill's paper on "The Medals of Matteo de' Pasti" was, as he himself explains, to give a sample of the method that he proposes to adopt in the work on Italian Medals which he has had for many years in preparation. The method here "ventilated" includes a brief biography, an enumeration of the fixed points in the medallist's career, and a critical estimate of him as an artist, besides the usual numismatic information. To judge by the sample given, Mr. Hill's plan promises to be very successful, and it is needless to say that it is worked out with minute care and exhaustive research.

It is a pity indeed that the description of the fine types included in Mr. Hill's paper was not accompanied by at least a partial attempt at illustration. The reason for this, I understand, was the very inadequate field for the proper

illustration of large medals offered by the *Numismatic Chronicle* in its present shape. The format of our publication in fact excludes the possibility of plates setting forth the groups of such medals needful for comparative purposes. At the same time the restricted field greatly enhances the cost of illustration in the case of lesser coins by involving a multiplication of plates. For these and other reasons I venture to give expression to the hope that at the conclusion of our present *decennium* the *Chronicle* may be issued in a larger format. Our sister Society, the British Numismatic, has set a good example in this respect.

Among the Members of the Society taken from us during the present year a special tribute is owing to Dr. Greenwell, the "Grand Old Man" of British Archaeology, who died on January 27 after nearly concluding his ninety-eighth year, active in mind and body almost to the last. Of his special services to the prehistoric archaeology of the British Islands I have had occasion to speak elsewhere, but it is a proof of the width of his interests and his tireless energy that he should also have left a permanent mark in the field of Greek numismatics. It was due to his personal surroundings that his earliest interests lay in the domain of classical antiquity. The Roman camp of Lanchester lay on his father's property, and investigation of its remains was a great attraction to him as a boy. The familiarity with Roman coins thus early acquired no doubt served as a preparation for the deep interest in Greek coins shown in later years, and to which his communications to our Society bear ample witness. He devoted himself principally to the archaic Greek class, and later, in a special way, to the electrum coinage of Cyzicus. The unique series of these that he himself had succeeded in collecting formed the basis of a paper in the *Chronicle* describing 172 varieties, to a large extent unpublished, of a class of coins which when Eckhel wrote was entirely unknown! Dr. Greenwell subsequently sold his collection for private reasons, and New England and the Boston Museum may be congratulated on having become their ultimate repository.

It may be of interest to the Society that I should mention a personal experience which enabled me to supply a striking corroboration of the view expressed by Dr. Greenwell that the gold used in these electrum pieces was obtained from the Ural and Altai Mountains, and made its way to Cyzicus by the ancient "Hyperborean" trade route through Panticapaeum, the modern Kertch. The Cyzicene coin in his collection which bears an evident allusion to this overland route from the far North was in fact obtained by myself from the actual site of Panticapaeum.[1] On the obverse of this stater, Apollo, with a laurel branch in his hand, is seen riding one of the sacred griffins whose function it was to guard the buried gold.[2] It will be remembered that a variant form of this fabled monster appears as the type of Panticapaeum itself, and no type could better illustrate the practice of the monetary magistrates of Cyzicus of placing on the coinage complimentary allusions to the commercial connexions of the city.

The most serious numismatic work of the year is the recently issued volume by our member, Professor Percy Gardner, entitled *A History of Ancient Coinage*, 700–300 B. C. Its special value consists in the adoption of a new plan of arrangement, "taking cities in groups rather than separately, tracing lines of trade influence from district to district, trying to discern the reasons why particular coin standards found acceptance in one locality or another". It is an attempt to look at the Greek coinages in their collective aspect, and to follow out the continuous system of coinages as a whole.

A question which Professor Gardner has to face at the outset is one which for traditional reasons seems to be singularly distasteful to classical scholars. All the weight of the "Litteratur" has hitherto been in favour of the exclusive derivation of the Greek standards from the Babylonian or Phoenician. The idea that there had established itself in

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[1] *Num. Chron.*, 1897, Pl. 1, 21, and p. 56, No. 20.

[2] Herodotus, iii. 116.

the Aegean lands a highly elaborate weight system, or rather groups of systems, at least a thousand years earlier than any existing Greek or Semitic record of the kind in that area is quite foreign to the preconceived ideas of classical metrologists. Yet we know by analogy how immense was the debt of later Greece in almost every branch of civilized tradition to this indigenous culture.

Professor Gardner indeed does not neglect this evidence, though I venture to think he under-estimates its precise nature. In my paper in *Corolla Numismatica* I showed that this evidence rests not only on a whole series of weights which, as he justly says, when "without an inscription are very hard to identify as belonging to this or that system", but of weights with intelligible marks of division, and of corresponding clay documents with equations given for bronze talents, and of whole deposits of the bronze talents themselves. The main result is, I venture to think, well ascertained, namely, that the Egyptian kedets and gold weights, as well as talents answering to the Babylonian (though probably also introduced from Egypt), were in use throughout the Minoan world. There seems indeed to have been a regular currency for gold bars, and of "skillings" cut from such, answering to multiples of the Egyptian gold unit, as well as of gold and silver "dumps" or drops, some of them standing in relation with the kedet system, and supplying, as I venture to believe, the antecedent stage to the earliest gold issues of Ionian Greece and Asia Minor.

The natural link between the earlier civilization and the ater is supplied by the Ionian Greeks; and the more this subject is investigated the greater is the indebtedness to Minoan tradition, in religion as well as in arts and crafts, that they betray. Is there any warrant for supposing that old weights and measures were not also preserved by them? It is certainly not a mere coincidence that the gold unit of about 4·5-4·6 grammes, or 70-72 grains, answering to the Egyptian ½ kedet, which recurs among the Minoan gold "skillings" and dumps, should closely approach that of the early group

of electrum coins of Ionia, and at the same time exactly answers to the earliest silver standard of Thasos and the neighbouring Thracian coast. Professor Gardner makes the illuminating suggestion that it was to this Ionian or Thracian source that Pisistratus had recourse for his new Attic standard. He admits the probability of its derivation from the Egyptian kedet system, which as he shows prevailed in Naukratis and Cyrene, and attributes its spread to the influence of Naukratite commerce. But at Naukratis itself (no coins of which are known before the fourth century, and those of bronze) there was no real currency of coined money of a definite denomination. The hoards of Greek silver coins found there representing various standards were mixed up with lumps of the same metal to be all weighed together. That this city should have been instrumental in introducing a special Egyptian standard on the Ionian coast, to me at least seems highly improbable. But when the intensive transmission of Minoan elements among the Ionians themselves is borne in mind it can hardly seem remarkable that the old Aegean standard had itself survived among them, as is usual in such cases, in a slightly reduced form.

One of the most important features in Professor Gardner's study is his demonstration of the important part played by the Chian standard, which in the early part of the fourth century spread all along the coast of Asia Minor. He reasonably connects this with Spartan influence, and with the advantage which the Chian tetradrachm had from being tariffed as the fortieth of the Aeginetan mina, and equivalent therefore to two and a half Aeginetan drachms.

But it is far from my purpose to attempt a detailed review of Professor Gardner's important work. It illustrates at every turn the disadvantage from which all students of antiquity must suffer when they follow in too isolated a fashion the individual fortunes of Greek cities as evidenced by their coinage. What can be more misleading than the ordinary numismatic arrangement by which Byzantium and Chalcedon, so closely connected in their history, are

removed far apart from one another and relegated to different volumes owing to the accident that one stands on the European, and the other on the Asiatic side of the Bosporus? What, again, can be more perverse than the similar divorce of the inseparably related cities of Rhegium and Zankle standing on the opposite sides of the Sicilian strait?

It is true that no general classification of coins of different cities can be attempted on the basis of standard alone. But it is none the less clear that without a comprehensive survey from that point of view, such as Professor Gardner has here supplied, it is impossible to gain a clear perception of the way in which the local coinages illustrate the currents of trade or the operation of external political forces.

The basis of all numismatic classification must remain geographical, but let us hope not of the artificial and anachronistic kind hitherto in vogue, which takes as the basis for the grouping of Greek cities a provincial system of Roman date. Let me take a single instance in the case of the recent Magna Graecian find, of which I propose to give an account, consisting of coins of the politically and territorially connected cities of Tarentum, Metapontum, and Heraclea. The first are included according to the present arrangement under the heading "Calabria", and the two latter are assigned to a Lucanian province of vast extent, and grouped with cities like Poseidonia and Velia on the Tyrrhene shores. The whole question, as I fully realize, is beset with difficulties, but it is one which in the interests of numismatic science must be boldly faced. And in this connexion I will venture to express the hope that the new edition of the *British Museum Coins of Magna Graecia*—of which the urgent need has long been felt—may afford the occasion for setting aside this antiquated scheme of geographical distinction.

The President then read the paper on a "Recent Find of Magna Graecian Coins", which is printed in the *Chronicle*, Vol. xviii.

A vote of thanks having been proposed by Sir Henry Howorth to the President for his address, the result of the

ballot for office-bearers for 1918–1919 was announced as follows:

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Vice-Presidents.

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H. W. TAFFS, ESQ.
FREDERICK A. WALTERS, ESQ., F.S.A.

The President then proposed a vote of thanks to the Auditors and Scrutineers, and adjourned the Society till October.